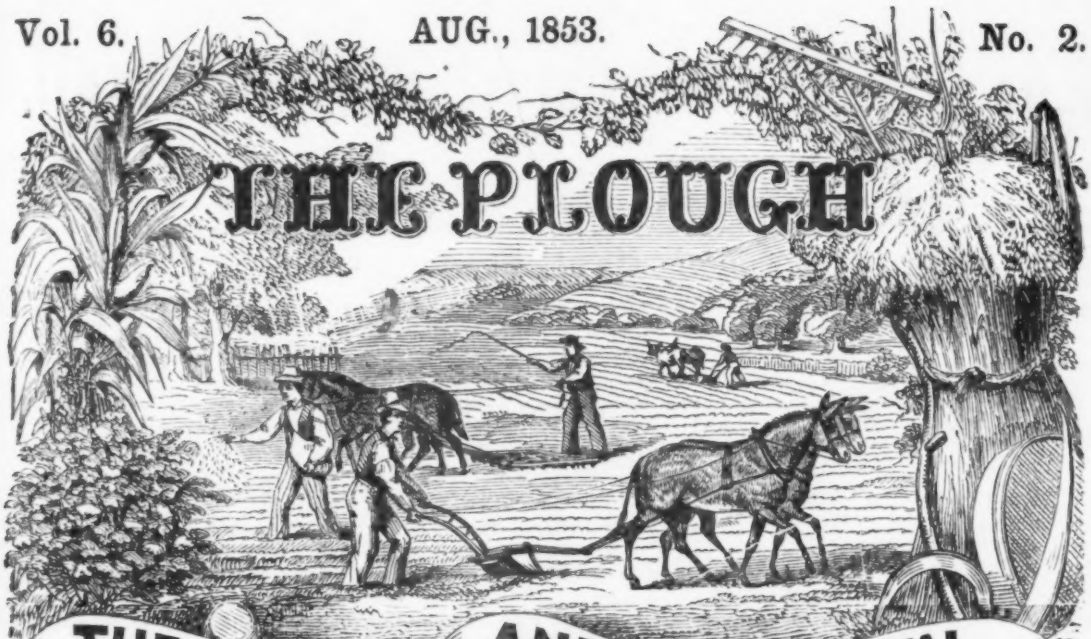
Vol. 6. AUG., 1853. No. 2.

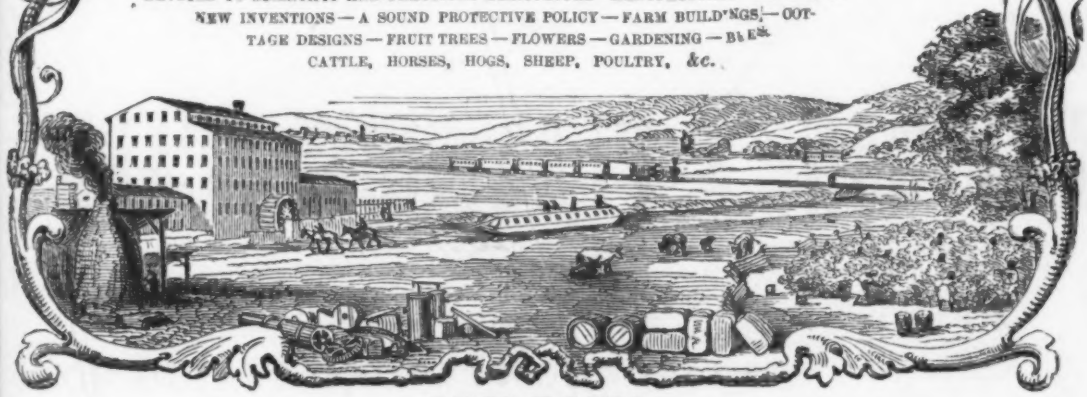
THE PLOUGH



THE LOOM AND THE ANVIL.

FARMER AND MECHANIC.

DEVOTED TO SCIENTIFIC AND PRACTICAL AGRICULTURE—MANUFACTURES—MECHANICS—NEW INVENTIONS—A SOUND PROTECTIVE POLICY—FARM BUILD'NGS—COTTAGE DESIGNS—FRUIT TREES—FLOWERS—GARDENING—BEES, CATTLE, HORSES, HOGS, SHEEP, POULTRY, &c.



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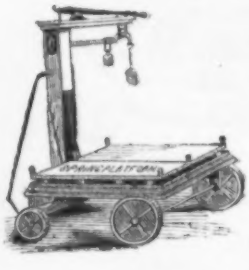

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THE ACKNOWLEDGED STANDARD.

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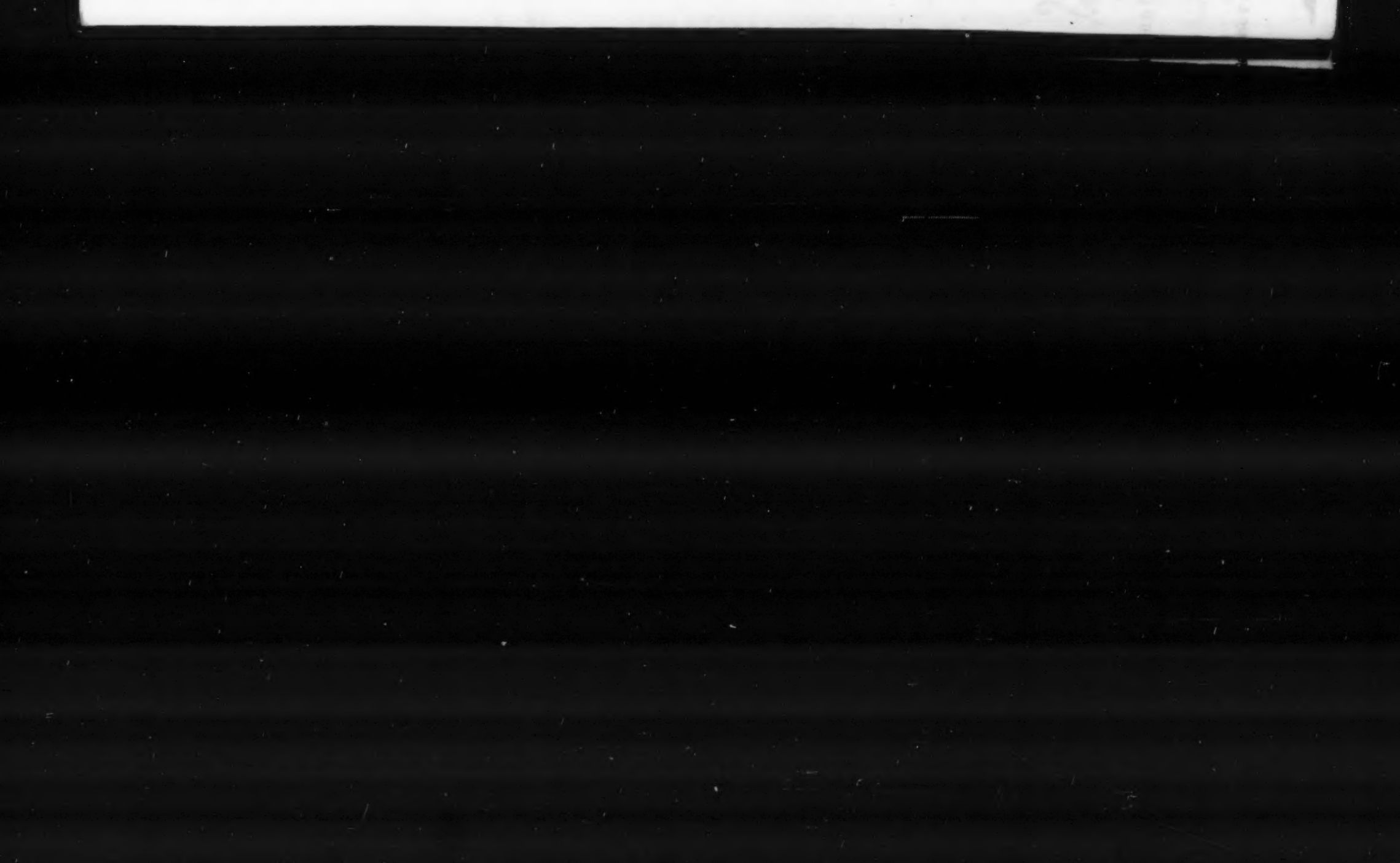

The Plough, the Loom, and the Anvil.

PART I.—VOL. VI. AUGUST, 1853. No. 2.

CAREY'S NEW WORK ON POLITICAL ECONOMY—ABSTRACTION AND RESTITUTION.

THE progress of agricultural science during the last half century has been very rapid, and has kept an even pace with the most successful of its competitors in the labor of subduing the material world to the complete control of man, and making it contribute to the wants and purposes of the intelligent beings by which it is peopled. Although the triumphs of the laboratory, and the demonstrations of the severest analyses, have thus opened a wide domain to man, the practical adoption of the truths and the measures they prescribe is, however, but slow. The time-honored usages of the past are invested with an air of sacredness which repels the novelties of the innovator; and the prejudices of the majority of producers in favor of ploughing in the same field, and following in the beaten paths of their predecessors, serve to keep up customs which the true light of scientific demonstration proves to be imperfect, if not actually pernicious.

If it is true that "he who makes two blades of grass to grow where but one grew before, is a benefactor of the race," then the agricultural chemist of our day, and the scientific agriculturist of our age, are truly benefactors; for they show conclusively that vast improvements may be made in our agricultural methods, and that largely increased rewards of labor may be won, oftentimes by slight improvements or changes in the mode of cultivation. As production is the true basis of the national wealth, as well as of that of the individual, and labor is the agent in production, it is clear that the interest of producers of every class lies in the direction of the largest return for the least labor — thus dignifying and investing with a moral power, and in a better form, the debasing maxim of commerce, to sell dear that which is bought cheap, or, in other words, "get the largest return for the least outlay."

Of all the developments and facts of modern chemical science, none have a more important connection with the interests of the world than those indicated by the caption of this article — those which relate to the abstraction of the properties of the soil, and the restitution in some shape of those elements which impart fertility and value to the soil. The analysis of the various soils and their products show, beyond doubt, that there is a law of nature operating in a thousand forms, so universal and so rigid, that a disregard of its demands leads surely to poverty and decay. Those products which contain phosphate of lime must be fed with phosphate; those containing a distinct proportion of sulphate of lime must be fed with sulphate of lime or gypsum; and so of all other elements whatsoever. The law of supplying the proper elements of fertility, which is but affording food for the plants upon which

they may subsist and grow, is just as stern as the same law in the animal economy. The animated organism must have food, or exhaustion, disease, and death must ensue. It must have that kind and quantity of food which will furnish elements of growth to the bones, the tissues of the integuments, and the various parts of the animal frame, or one will be developed and another will be weakened. The assimilation must be complete and suited to all the wants of the system, or the system will fail and lose by so much as it is deprived of its needful nourishment. As an illustration of the exhaustion of the soil, the following facts are given by the eminent Liebig:

"A field in which phosphate of lime or the alkaline phosphates form no part of the soil, is totally incapable of producing grain, peas or beans.

"An enormous quantity of these substances, indispensable to the nourishment of plants, is annually withdrawn from the soil, and carried into great towns, in the shape of flour, cattle, etc. It is certain that this incessant removal of the phosphates must tend to exhaust the land and diminish its capability of producing grain. The fields of Great Britain are in a state of progressive exhaustion from this cause, as is proved by the rapid extension of the cultivation of turnips and mangel wurzel—plants which contain the least amount of the phosphates, and therefore require the smallest quantity for their development. These roots contain eighty to ninety-two per cent. of water. Their great bulk makes the amount of produce fallacious, as respects their adaptation to the food of animals, inasmuch as their contents of the ingredients of the blood—*i. e.*, of substances that can be transformed into flesh—stand in a direct ratio to their amount of phosphate; without which neither blood nor flesh can be formed.

"Our fields will become more and more deficient in these essential ingredients of food, in all localities where custom and habit do not admit the collection of the fluid and solid excrements of man, and their application to the purposes of agriculture. In a former letter I have shown you how great a waste of phosphate is unavoidable in England, and referred to the well-known fact that the importation of bones restored in a most admirable manner the fertility of the fields exhausted from this cause. In the year 1827, the importation of bones for manure amounted to 40,000 tons, and Huskisson estimated their value to be from £100,000 to £200,000 sterling. The importation is still greater at present; but it is far from being sufficient to supply the waste.

"We believe that the importation of one hundred-weight of *guano* is equivalent to the importation of eight hundred-weight of wheat; the hundred-weight of guano assumes, in a time which can be accurately estimated, the form of a quantity of food which corresponds to eight hundred-weight of wheat. The same estimate is applicable in the valuation of bones.

"If it were possible to restore to the soil of England and Scotland the phosphates which during the last fifty years have been carried to the sea by the Thames and the Clyde, it would be equivalent to manuring with millions of hundred-weights of bones, and the produce of the land would increase one third, or perhaps double itself in five years."*

To such accuracy has this scientific application of chemistry to agriculture attained, that, as remarked by the same author,

"We can calculate exactly how much and which of the component parts of the soil we expect in a sheep or an ox; in a quarter of barley, wheat, or

* Familiar Letters on Chemistry, in its Relations to Physiology, Dietetics, Agriculture, Commerce, and Political Economy. By Justus Von Liebig. London, 1851. p. 522.

potatoes; and we can discover from the known composition of the excrements of man and animals, how much we have to supply to restore what is lost to our fields."—p. 498.

This exportation of the valuable fertilizing elements has been going on for a long time in Ireland, by the shipping of grain and live stock to England, and leaving the potatoes to be consumed by the people of that country. According to the London *Times*, the day will probably come, and is not remote, when Ireland will be a grazing country, to furnish cattle for the English market. This is announced in the following extract from that journal:—

"When the Celt has crossed the Atlantic, he begins for the first time in his life to consume the manufactures of this country, and indirectly to contribute to its customs. We may possibly live to see the day when the chief product of Ireland will be cattle, and English and Scotch the majority of her population."

The destruction of the soil implied in the above paragraph is appalling, in an economical point of view. During the ten years from 1841 to 1851, the population of Ireland decreased 1,659,330, while, by a true course of things, it should have increased three fourths of a million; so that Ireland is now nearly two millions and a half poorer in population than she should be. The impoverishment of the soil produced poverty and disease of her chief article of food; this decay of the potato occasioned disease, and death, and expatriation among the people, and hence England has been making the rich soil of Ireland poorer by a three-fold process—exhaustion of her soil, exhaustion of her men by famine, and expatriation to a foreign land. To the climax of the two latter, she purposes to add a fourth—the exportation of all the cattle which can be tantalized into a marketable form for English dinner-tables.

But to quote again from the distinguished author of the Letters:—

"The principal problem for agriculture is, how to replace those substances which have been taken from the soil, and which cannot be furnished by the atmosphere. If the manure supplies an imperfect compensation for this loss, the fertility of a field or of a country decreases; if, on the contrary, more is given to the fields, their fertility increases."—p. 499.

The principal problem for political economy, to apply the above proposition to our theme, is, how to replace those elements of wealth which are abstracted from a nation, and which cannot be replaced by commerce. If labor supplies an imperfect compensation for this loss, the wealth of a country decreases. If, on the contrary, a greatly increased amount of diversified labor is employed, its wealth increases.

The application and proper elucidation of these principles in connection with the great question—In what does the wealth of nations consist? is a work of no little consequence to the economist. We may be satisfied with clinging to old truths until new ones shall have been thoroughly tested; but when new truths demonstrate and brighten the old, then every reason is to be found in favor oft he speediest adoption of these better guides. So in the present instance: if the history of the world, and the enlarged experience of to-day, proves that the reasoning of the philosopher and the maxims of the economist are abundantly confirmed by the triple force of history, experience, and analytical and synthetical demonstrations, then wisdom points out but one path to her enlightened children.

The work* which the present brief notice is intended to introduce to the

* The Slave Trade, Domestic and Foreign: Why it exists, and how it may be extinguished. By H. C. Carey. Philadelphia: A. Hart. 1 vol. 12mo., pp. 426. 1853.

reader, we believe we may characterize as being based upon this truth for its corner-stone. It takes no narrow or sectional view of the leading subject which appears on the title-page, but, with a broad and masterly grasp of the philosophy of natural, moral and physical action, it discusses boldly and nobly the relations of the material and the moral world, and points out, with an unerring finger, some of the causes of social bondage, and the means by which it is to be overcome.

There can be no doubt that the rewards of labor are to form the central point in some of the questions connected with the social problems of our age. Why do some men grow richer while others grow poorer at their side? Why do some communities increase in splendor, ostentation and magnificence, while beneath the tinselled drapery which attracts the eye of the spectator there is a vast and terrible derangement and corruption which is appalling to the lover of his race? Why do millions "bleed gold for ministers to sport away," and pour out the heart's blood of a nation for the purpose of clothing with richer robes the few who hold or usurp the chair of state? Why do millions become enslaved in all that makes freedom precious, in lands boasting constitutions, and liberty, and law? The answer is found by recurring to first principles, and detecting the fact, every where obvious, that abstraction is not followed by the restitution demanded by the laws of nature and the true economy of the race.

We are not disposed to find fault with the title of the work. Yet it does not, by any means, convey a true idea of the comprehensive discussion contained in its pages. The sensitive "State Rights" or "Union" man, who is jealous of any interference with what he conceives to be his guaranteed rights; the passive sleeper, who sustains his country, "right or wrong," and the ultra abolitionist, are alike, by the title, unprepared for the complete unveiling of the system of universal enslavement enforced by the industrial policy of one nation occupying a commanding position in the affairs of the world.

The author opens with a review of slavery and emancipation; how continued, how effected, and why; and why and how emancipation has *failed* in the West Indies. In successive chapters of the work, these views are unfolded and applied to Ireland, Scotland, Germany, Russia, India, China, the United States, Turkey, and other nations; and the colonial, commercial, and industrial dependence of these countries upon the great centre of the world's forces is illustrated convincingly, we think, by abundant testimony. The philosophy of the book may be summed up in one sentence: Abstraction from the soil produces the abstraction and exportation of man, while restitution to the soil occasions the increase of man and his means for social and national happiness, by multiplying the rewards of his labor. Hence, to make man *free*, he must make the most direct exchange, 1st, with the soil, 2d, with his neighbor, and 3d, with other communities or nations.

The reader will probably be curious to know how this theory is worked out, as it is, into one of the most important contributions to political philosophy which have appeared for many years. Speculations of profound thinkers are valuable for the truths they often teach; but philosophers who spend their time, like the ancient Athenians, in "hearing or telling some new thing," are often led to view as moral facts the conclusions at which they arrive, when, indeed, their starting-point, or their stand-point, is seriously wide of the truth. As a consequence, speculations submitted to the test of experience often vanish as dew before the rays of the sun.

The author of "The Slave Trade" is eminently a man of FACTS. Nothing

is of any value in his esteem which is not based upon past experience, or which anticipated experience will not confirm. The multitude of facts furnished as illustrations of the truths he propounds, are themselves worthy the attention of thinking readers of every class.

Among the forcible exhibitions of the slavery occasioned by this exhaustion of the soil by the false commercial and industrial policy which aims to make Great Britain the workshop and exchange factor of the world, compelling all nations to send the fertilizing properties of their soils to England in raw products, to receive back again nothing in return, the chapter on Ireland is valuable and thrilling in painful interest. Our space forbids a quotation of the whole, and we confine ourselves to a selection of passages from the author's argument:

1. "That if there is to be but one place of exchange or manufacture for

ERRATUM.

There should be inserted (before these propositions) the sentence of two lines printed on p. 75—"The impression," &c. And the paragraph following those lines should not be marked as a quotation.

5. "That the impoverishment of the land renders necessary a removal to new and more distant lands.

6. "That this renders necessary a larger amount of transportation, while the impoverishment of the farmer increases the difficulty of making roads.

7. "That the increased distance of the market produces a steadily increased necessity for limiting the work of cultivation to the production of those commodities which can be obtained from high and dry lands, and that the quantity of products tends therefore to diminish with the increased distance from market.

8. "That with each step in the progress of exhausting the land, we are compelled to separate more widely from each other; and that there is therefore a steady diminution in the power of association for the making of roads, or the establishment of schools; and that the small towns, or near places of exchange, tend gradually towards depopulation and ruin.

9. "That the more men separate from each other, the less is the power to procure machinery, and the greater necessity for cultivating the poorest soils, even though surrounded by lead, iron and copper ore, coal, lime, and all other of the elements of which machinery is composed.

10. "That with the diminished power of association, children grow up uneducated, and men and women become rude and barbarous.

11. "That the power to apply labor productively tends steadily to diminish; and that women, in default of other employment, are forced to resort to the field, and to become slaves to their fathers, husbands, and brothers.

12. "That the power to accumulate capital tends likewise to diminish; that land becomes from day to day more consolidated; and that man sinks gradually into the condition of a slave to the landed or other capitalist.

13. "That with this steady passage of man from the state of a freeman to that of a slave, he has steadily less to sell, and can therefore purchase less; and that thus the only effect of a policy which compels the impoverishment of the land and its owner is to destroy the customer, who, under a

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1. "That if there is to be but one place of exchange or manufacture for the world, all the rest of the people of the world must limit themselves to agriculture.

2. "That this necessarily implies the absence of towns, or local places of exchange, and a necessity for resorting to a place of exchange far distant.

3. "That the distance of the place of consumption from the place of production forbids the possibility of returning to the land any of the manure yielded by its products.

4. "That this in turn implies the exhaustion of the land and the impoverishment of its owner.

5. "That the impoverishment of the land renders necessary a removal to new and more distant lands.

6. "That this renders necessary a larger amount of transportation, while the impoverishment of the farmer increases the difficulty of making roads.

7. "That the increased distance of the market produces a steadily increased necessity for limiting the work of cultivation to the production of those commodities which can be obtained from high and dry lands, and that the quantity of products tends therefore to diminish with the increased distance from market.

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different system of policy, might have become a larger purchaser from year to year."

* * * * *

"The government which followed the completion of the Revolution of 1688, pledged itself to discountenance the woollen manufacture of Ireland, with a view to compel the export of raw wool to England, whence its exportation to foreign countries was prohibited; the effect of which was, of course, to enable the English manufacturer to purchase at his own price. From that period forward, we find numerous regulations as to the ports from which alone woollen yarn or cloth might go to England, and the ports of the latter through which it might come; while no effort was spared to induce the people of Ireland to abandon woollens and take to flax. Laws were passed prohibiting the export of Irish cloth and glass to the colonies. By other laws, Irish ships were deprived of the benefit of the navigation laws. The fisheries were closed against them. No sugar could be imported from any place but Great Britain, and no drawback was allowed on its exportation to Ireland; and thus was the latter compelled to pay a tax for the support of the British government while maintaining its own. All other colonial produce was required to be carried first to England, after which it might be shipped to Ireland; and, as Irish shipping was excluded from the advantages of the Navigation Laws, it followed that the voyage of importation was to be made in British ships, manned by British seamen and owned by British merchants, who were thus authorized to tax the people of Ireland for doing their work, while a large portion of the Irish people were themselves unemployed.

"While thus prohibiting them from applying themselves to manufactures or trade, every inducement was held out to them to confine themselves to the production of commodities required by the English manufacturer, and wool, hemp, and flax were admitted into England free of duty. We see thus that the system of that day, in reference to Ireland, looked to limiting the people of that country, as it limited the slaves of Jamaica, and now limits the people of Hindostan, to agriculture alone; and thus depriving the men, the women, and the children of all employment, except the labor of the field, and of all opportunity for intellectual improvement, such as elsewhere results from that association which necessarily accompanies improvement in the mechanic arts.

"During our war of the Revolution, freedom of trade was claimed for Ireland; and as the demand was made at a time when a large portion of her people were under arms as volunteers, the merchants and manufacturers of England, who had so long acted as middlemen for the people of the sister kingdom, found themselves obliged to submit to the removal of some of the restrictions under which the latter had so long remained. Step by step changes were made, until at length, in 1783, Ireland was declared independent. Shortly after which, duties were imposed on various articles of foreign manufacture, avowedly with the intention of enabling her people to employ some of their surplus labor in converting her own food and wool, and the cotton-wool of other countries, into cloth. Thenceforward, manufactures and trade made considerable progress, and there was certainly a very considerable tendency towards improvement. Some idea of the condition of the country at that time, and the vast lamentable change that has since taken place, may be obtained from the consideration of a few facts connected with the manufacture of books in the closing years of the last century. The copyright laws not extending to Ireland, all books published in England might there be reprinted; and, accordingly, we find that all the principal English law reports of the day, very many of the earlier ones, and many of the best

treatises, as well as the principal novels, travels, and miscellaneous works, were republished in Dublin, as may be seen by an examination of any of our old libraries. The publication of such books implies, of course, a considerable demand for them, and for Ireland herself, as the sale of books in this country was very small indeed, and there was then no part of the world to which they could go. More books were probably published in Ireland in that day, by a single house, than are now required for the supply of the whole kingdom.

"With 1801, however, there came a change. By the Act of Union, the copyright laws of England were extended to Ireland, and at once the large and growing manufacture of books was prostrated. The patent-laws were also extended to Ireland; and, as England had so long monopolized the manufacturing machinery then in use, it was clear that it was there improvements would be made, and that thenceforth the manufactures of Ireland must retrograde. Manchester had the home market, the foreign market, and, to no small extent, that of Ireland open to her, while the manufacturers of the latter were forced to contend for existence, and under the most disadvantageous circumstances, on their own soil. The one could afford to purchase expensive machinery, and to adopt whatever improvements might be made, while the other could not. The natural consequence was, that Irish manufactures gradually disappeared as the Act of Union came into effect. By virtue of its provisions, the duties established by the Irish Parliament for the purpose of protecting the farmers of Ireland in their efforts to bring the loom and the anvil into close proximity with the plough and the harrow, were gradually to diminish, and free-trade was to be fully established; or, in other words, Manchester and Birmingham were to have a monopoly of supplying Ireland with cloth and iron. The duty on English woollens was to continue twenty years. The almost prohibitory duties on English calicoes and muslins were to continue until 1808, after which they were to be gradually diminished, until in 1821 they were to cease. Those on cotton yarn were to cease in 1810. The effect of this in diminishing the demand for Irish labor is seen in the comparative view of manufactures at the date of the Union, and at different periods in the ensuing forty years.

"Deprived of all employment, except in the labor of agriculture, land became, of course, the great object of pursuit. 'Land is life,' had said, most truly and emphatically, Chief Justice Blackburn; and the people had now before them the choice between the occupation of land *at any rent*, or *starvation*. The lord of the land was thus enabled to dictate his own terms; and therefore it has been that we have heard of the payment of five, six, eight, and even as much as ten pounds per acre. 'Enormous rents, low wages, farms of an enormous extent, let by rapacious and indolent proprietors to monopolizing land-jobbers, to be re-let by intermediate oppressors for five times their value, among the wretched starvers on potatoes and water,' led to a constant succession of outrages, followed by Insurrection Acts, Arm Acts, and Coercion Acts, when the real remedy was to be found in the adoption of a system that would emancipate the country from the tyranny of the spindle and the loom, and permit the labor of Ireland to find employment at home.

"That employment could not be had. With the suppression of Irish manufactures the demand for labor had disappeared. An English traveller, describing the state of Ireland in 1834, thirteen years after the free-trade provisions of the Act of Union had come fully into operation, furnishes numerous facts, which will now be given, showing that the people were compelled to emain idle, although willing to work at the lowest wages—such wages as ould not by any possibility enable them to do more than merely su tain life, and perhaps not even that:

"'CASHEL.—Wages here only *eightpence a day*, and numbers altogether without employment.'

"'CAHIR.—I noticed, on Sunday, on coming from church, the streets crowded with laborers, with spades and other implements in their hands, standing to be hired; and I ascertained that any number of these men might have been engaged, on constant employment, at *sixpence per day* without diet.'

"'WICKLOW.—The husband of this woman was a laborer, at *sixpence* a day, *eighty* of which sixpences—that is, eighty days' labor—were absorbed in the rent of the cabin. In another cabin was a decently-dressed woman, with five children, and her husband was also a laborer at *sixpence a day*. The pig had been taken for rent a few days before. I found some laborers receiving only *fourpence per day*.'

"It might be thought, however, that Ireland was deficient in the capital required for obtaining the machinery of manufacture to enable her people to maintain competition with her powerful neighbor. We know, however, that previous to the Union she had that machinery; and from the date of that arrangement, so fraudulently brought about, by which was settled conclusively the destruction of Irish manufactures, the *annual* waste of labor was greater than the whole amount of capital then employed in the cotton and woollen manufactures of England. From that date, the people of Ireland were thrown, from year to year, more into the hands of middlemen, who accumulated fortunes that they *would* not invest in the improvement of land, and *could* not, under the system which prostrated manufactures, invest in machinery of any kind calculated to render labor productive, and all their accumulations were sent therefore to England for investment. An official document published by the British Government shows that the transfers of British securities from England to Ireland—that is to say, the investment of Irish capital in England—in the thirteen years following the final adoption of free-trade in 1821, amounted to as many millions of pounds sterling; and thus was Ireland forced to contribute cheap labor and cheap capital to building up 'the great works of Britain.' Further, it was provided by law that whenever the poor people of a neighborhood contributed to a saving fund, the amount should not be applied in any manner calculated to furnish local employment, but should be transferred for investment in the British funds. The landlords fled to England, and their rent followed them. The middlemen sent their capital to England. The trader or the laborer that could accumulate a little capital saw it sent to England, and he was then compelled to follow it. Such is the history of the origin of the present abandonment of Ireland by its inhabitants.

"The form in which rents, profits, and savings, as well as taxes, went to England, was that of raw products of the soil, to be consumed abroad, yielding nothing to be returned to the land, which was of course impoverished. The average export of grain in the first three years following the passage of the Act of Union, was about 300,000 quarters; but as the domestic market gradually disappeared, the export of raw produce increased, until at the close of twenty years it exceeded a million of quarters; and at the date of Mr. Inglis's visit, it had reached an average of two and a half millions, or 22,500,000 of our bushels. The poor people were, in fact, selling their soil to pay for cotton and woollen goods that they should have manufactured themselves; for coal, which abounded among themselves; for iron, all the materials of which existed at home in great profusion, and for a small quantity of tea, sugar, or other foreign commodities, while the amount

required to pay rent to absentees and interest to mortgages, was estimated at more than thirty millions of dollars. Here was a drain that no nation could bear, however great its productive power; and the whole of it was due to the system which forbade the application of labor, talent or capital to any thing but agriculture, and thus forbade advance in civilization. The inducements to remain at home steadily diminished. Those who could live without labor found that society had changed; and thus fled to England, France, or Italy. Those who desired to work, and felt that they were qualified for something beyond mere manual labor, fled to England or America; and thus by degrees was the unfortunate country depleted of every thing that could render it a home in which to remain, while those who could not fly remained to be, as the *Times* so well describes it, mere 'hewers of wood and drawers of water to the Saxon.' Happy when a full-grown man could find employment at *sixpence a day*, and that, too, without food!

"'Throughout the west and south of Ireland,' said an English traveller in 1842, four years before the exhaustion of the soil had produced disease among the potatoes, the traveller is haunted by the face of the *popular starvation*. It is not the exception; it is the *condition* of the people. In this fairest and richest of countries, men are suffering and *starving by millions*. There are thousands of them, at this minute, stretched in the sunshine at their cabin doors with *no work*, scarcely any food, no hope seemingly. Strong countrymen are lying in bed, "*for the hunger*"—because a man lying on his back does not need so much food as a man on foot. Many of them have torn up the unripe potatoes from their little gardens, and to exist now must look to winter, when they shall have to suffer starvation and cold too.'—*Thackeray*. 'Every where', said the *Quarterly Review*, 'throughout all parts, even in the best towns, and in Dublin itself, you will meet men and boys—not dressed, not covered—but hung round with a collection of rags of unrivalled variety, squalidity, and filth—walking dunghills. . . . No one ever saw an English scarecrow with such rags.'

"The difference in the condition of these poor people—even the slave of Jamaica of that day—consisted in this, that the negro slave was worth buying, whereas the others were not; and we know well that the man who pays a good price for a commodity attaches to it a value that induces him to give some care to its preservation; whereas he cares nothing for another that he finds himself forced to accept. 'Starving by millions,' as they are here described, death was perpetually separating husbands and wives, parents and children, while to the survivors remained no hope but that of being enabled, at some time or other, to fly to another land, in which they might be permitted to sell their labor for food sufficient to support life.

"The existence of such a state of things was—said the advocates of the system which looks to converting all the world outside of England into one great farm—to be accounted for by the fact that the population was too numerous for the land; and yet a third of the surface, including the richest lands in the kingdom, was lying unoccupied and waste.

"'Of single counties,' said an English writer, 'Mayo, with a population of 389,000, and a rental of only £300,000, has an area of 1,364,000 acres, of which 800,000 are waste! No less than 470,000 acres, being very nearly equal to the whole extent of surface now under cultivation, are declared to be reclaimable. Even the Union of Glenties, Lord Monteagle's *ne plus ultra* of redundant population, has an area of 240,000 acres, of which 200,000 are waste, and for the most part reclaimable to its population of 43,000; while the barony of Ennis—that abomination of desolation—has 230,000

acres of land to its 5000 paupers—a proportion which, as Mr. Carter, one of the principal proprietors, remarks in his circular advertisement for tenants, is at the rate of only one family to 230 acres; so that if but one head of a family were employed to every 230 acres, there need not be a single pauper in the entire district; a proof, he adds, that *nothing but employment is wanting to set this country to rights*. In which opinion we fully coincide.'

"Nothing but employment *was* needed; but that could not be found, under the system which has caused the annihilation of the cotton manufacture of India, notwithstanding the advantage of having the cotton on the spot, free from all cost for carriage. As in Jamaica, as in India, the land had been gradually exhausted by the exportation of its products in their rudest state, and the country had thus been drained of capital; a necessary consequence of which was, that the labor even of men found no demand, while women and children starved, that the women and children of England might spin cotton and weave cloth that Ireland was too poor to purchase. Bad, however, as was all this, a worse state of things was at hand. Poverty and wretchedness compelled the wretched people to fly in thousands and tens of thousands across the Channel, thus following the capital and the soil that had been transferred to Birmingham and Manchester; and the streets and cellars of those towns, and those of London, Liverpool, and Glasgow, were filled with men, women and children in a state almost of starvation; while throughout the country men were offering to perform the farm labor for food alone, and a cry had arisen among the people of England that the laborers were likely to be swamped by these starving Irishmen; to provide against which, it was needed that the landlords of Ireland should be compelled to support their own poor, and forthwith an act of Parliament was passed for that purpose. Thence arose, of course, an increased desire to rid the country of the men, women and children whose labor could not be sold, and who could therefore pay no rent. The 'Crowbar Brigade' was therefore called into more active service, as will be seen by the following account of their labors in a single one of the 'Unions' established under the new poor-law system which, in many cases took the whole rent of the land for the maintenance of those who had been reduced to pauperism by the determination of the people of Manchester and Birmingham to continue the colonial system under which Ireland had been ruined.

"'In Galway Union, recent accounts declared the number of poor evicted and their homes levelled within the last two years, to equal the numbers in Kilrush—4,000 families; and 20,000 human beings are said to have been here also thrown upon the road, houseless and homeless. I can readily believe the statement, for to me some parts of the country appeared like an enormous graveyard—the numerous gables of the unroofed dwellings seemed to be gigantic tombstones! They were, indeed, records of decay and death, far more melancholy than the grave can show. Looking on them, the doubt rose in my mind, Am I in a civilized country? Have we really a free constitution? Can such scenes be paralleled in Siberia or Caffraria?'

"A single case described in a paper recently published by Mr. Dickens, in his '*Household Words*,' will convey to the reader some idea of an eviction, that may be taken as a specimen, and perhaps a fair one, of the *fifty thousand* evictions that took place in the single year 1849, and of the hundreds of thousands that have taken place in the last six years.

"'Black piles of peat stood on the solitary ground, ready after a summer's cutting and drying. Presently, patches of cultivation presented themselves; plots of ground raised on beds, each a few feet wide, with intervening

trenches to carry off the boggy water where potatoes had grown, and small fields where grew more ragwort than grass, enclosed by banks cast up and tipped here and there with a brier or a stone. It was the husbandry of misery and indigence. The ground had already been freshly manured by sea-weed, but the village—where was it? Blotches of burnt ground, scorched heaps of rubbish, and fragments of blackened walls, alone were visible. Garden-plots were trodden down and their few bushes rent up, or hung with tatters of rags. The two horsemen, as they hurried by with gloomy visages, uttered no more than the single word—EVICTION!"

Our pages forbid a complete analysis of this valuable work, or a further quotation from its pages. The argument above given in relation to Ireland, is applied with equal power to other nations, from the poor and suffering, emancipated, black slave of Jamaica, who is compelled to send his sugar to England to be refined, to the sturdy Teuton; from the famished rice-grower of India, who is too poor to buy the rice which he grows, while it is shipped off for a market, to the more advanced subject of the Flowery Land. Slavery in all lands, whether that of the negro race in the East or West, in the United States or in South America; whether existing among the Coolies of India or China, or among the oppressed and degraded people of the British Islands, made slaves by a commercial policy—this universal slavery is held up to view in the light of science and philosophy. The numerous facts, gleaned with the industry of a thorough student of history and human nature, are valuable as materials of thought for all readers, even though the application of the argument is not welcome.

The impression left on the mind of the reader we think must be in accordance with the following truths, stated by the author in a series of propositions:

"England is effectually working out her own destruction with that of all other nations which place themselves in a colonial dependence upon her, through commercial regulations. The power of England is now that of machinery. She employs hundreds of thousands of steam engines and spindles. The coal and iron for the supply of these underlie her own area. But she has millions of human machines which depend upon the consumption and combustion of a large quantity of phosphate of lime and other elements. She has robbed her own soil, as well as that of Scotland and Ireland, of the phosphates, and seeks to restore it by digging up the bones of the Englishmen slaughtered at Waterloo, by importing guano from distant islands, and by attracting and compelling the soils of all other nations to lay their phosphates down on her shores in a superabundance of cheap fuel or food, to be consumed by her human machines, and then to be washed away from large manufacturing cities into the ocean. For this enormous waste, she offers the world the privilege of buying her fabrics at her own prices. For all which we are bound to be duly thankful."

We believe the work under review is calculated to produce a profound sensation among thinkers every where. We have read it with the interest of a romance, and we shall be greatly surprised if it does not attract unusual attention in every part of Europe. We commend it to the careful perusal of every man and woman who desires to know HOW MAN MAY BE MADE FREE.

AGRICULTURAL EDUCATION.

A BILL has recently passed the Legislature at Albany, establishing an Agricultural College. Of its details we have not informed ourselves, chiefly for want of opportunity. We are not aware that the bill has ever been printed in any of the public journals.

We congratulate the friends of agriculture in view of this result, as we do all other interests, when they obtain a public grant. We doubt whether it is possible to find any provision of this kind that has been made for a useful purpose, that did not accomplish some good. At least, such instances must be exceedingly rare. In this act of legislation, we have no doubt that good will result, and if a bird in the hand is worth a whole flock on the wing, the ultimate results cannot fail to be very desirable.

But if any one supposes that a collegiate institution is an efficient means of speedily reforming the agricultural practices of the mass of farmers, we are very sure he will find himself mistaken. It will do no such thing. It will not approximate to it in any essential degree. We would not oppose its establishment, because it will do some good. It is another light kindled in the midst of darkness. It tends to dissipate some of the ignorance which envelops the community. It will do this by giving new energy to intellect now dormant. Some youth, otherwise destined to go without any education above that of a horribly deficient district school, will be placed there, and have his eyes opened so as to discern what would otherwise be beyond the reach of his vision. There may be scores of such cases. If so, we shall get a rich recompense for the outlay of bags full of gold and silver. The indirect or secondary results of such measures are far greater than the primary. It is the snow-ball which accumulates as it is rolled. All, or nearly all, educational efforts, ever so unwisely conducted, present this same feature.

But this is nearly all that can be expected. How many will become pupils there? If, in three years, five hundred students should go through a systematic course, we presume "the experiment" would be pronounced "wonderfully successful." But how many farms are there in the State? According to that official document called *the Census*, which is, perhaps, as accurate as the responses of rapping spirits, there are about twelve and a half millions of acres of improved land. How long, at this rate, would it take to educate the owners of these and the seven millions of unimproved land? But this would not be necessary. Educate one in ten, and the rest would imitate, eventually, the *successful* experiments of the graduated operator. But how long would it take this tenth man to come into the possession of his farm, and, when there, to acquire such a knowledge of his own land as to qualify himself to exhibit any very marked results from his new modes of farming. If three seasons would prove sufficient, we should admire the remarkable skill of the new professors of the new institution. But, meanwhile, many failures would nearly counterbalance, in popular effect, the more successful attempts at reform.

Even this degree of success, we believe, is utopian—a mere picture of the fancy. As we said in our previous number, farmers already know that they need much more manure. They know that a liberal outlay for enriching their land will eventually return them much more than its cost, in increased crops. They know equally well that, on a majority of farms, movable steam engines, reapers, mowers, and other machinery, would save them much hard work. But they cannot find the means of buying them, and they dare not

incur debt in the purchase. What our farmers need, is an actual conviction that the remedy is within their reach; that it is possible for them to enrich their lands without incurring debts they can never pay, and that, with these facilities for their work, they can afford to run some risks. How can such convictions be produced? We answer:

1. By contriving manures that actually will be within their reach. Now, the Peruvian guano and the bone manures, the prepared charcoal and the "improved superphosphates" are "to be had," but they are locked up by patent-rights, or in secret recipes, or in "*terra culture*," or in some *other terra incognita*, if not *terra imaginata*, and are held at prices that frighten the timid man. He is not sure that they are so very good, or, if good on some soils, that they will pay on his. Now, if these gentlemen would be the real friends of agriculture, willing and wishing *in their heart* that their neighbors should grow rich, even though it does not enrich themselves, let them sell their wares at actual cost of time and material. Guano often pays a profit, we are quite sure, of much more than a hundred per cent. ere it reaches the consumer, and charcoal preparations quite as much; and our learned friend of the *Working Farmer* can tell how much profit he makes out of the *farmer who works* on his own land, before the latter can avail himself of his valuable compound. We doubt the propriety of making men pay great profits for that which is their life. Were a drowning man to call upon us for a rope or a board, we ought not to stand and higgle about the compensation for our services. Men *are* starving, because their crops can't get *vital air*. These gentlemen of the patent-right and 200-per-cent.-profit class tell them, "You are dying by inches, and you may die for all we will do, unless you will make for us a handsome fortune. We have the remedy just suited to your wants in casks and bags, but not a pound shall go out of our storehouse—not an item of our valuable discoveries shall you possess, unless you pay us a large tribute." Men may be taxed for luxuries, but we contend to the death against high taxes on the essentials of life.

While crops are exported, and other fruitful sources of loss are constantly open, barn-yard manures cannot be had to a sufficient extent to secure permanent fertility to the soil. There will be a great waste, as in cities, for example, and in what is consumed by ships at sea. The whole crop cannot be returned to the soil: and unless there is an entire reform in this matter; unless more prudence is exhibited in securing the immense amount of offal, excrement, and various kinds of waste in cities and elsewhere, there must be an immense loss. Taking "swamp-mud" and other deposits from our farms, is only borrowing what was collected in other places. This is as much the annual product of vegetation as any other manure, although the collection of these masses may have been the work of years. It is also obvious that another portion of annual growth which is incorporated in human organisms at their death, is essentially lost; and this is not a small item. We need not give statistics on such a topic, but a little calculation will satisfy any one that here is an immense loss that cannot be avoided. It is true that much of these crops came from the atmosphere, but the growth of every leaf and of every stalk uses up a portion of the soil, or at least tends to destroy its fertility. What was furnished by the atmosphere will be furnished again, of course, but only on condition that the soil shall be in as good a state to act as a medium.

2. The next requisite is to teach farmers the proper use of manures. How shall this be done? In the lecture-room of a college? This is not, in our view, the best place for giving or receiving such instruction. The machinery

now in use seems to us not only the best, but, in some important sense, the only available means. To give in detail all the information necessary on this subject, would be to read to the pupil the better part of all the agricultural publications in the land. This the college professor cannot do. He lays down general principles, and leaves the pupil to carry them out as best he may. But this is just what the periodicals of the day are doing, with the addition of full statements of actual experiments in the very district where the pupil's farm is situated. And besides this, periodicals are permanent. Their statements and instructions are in black and white, and may be referred to as required. The lecture is heard and forgotten. Let the State, or the "boys" and "girls" who are asked to give their small earnings to this college, expend $10,000 a year on the gratuitous circulation of the best agricultural journals, sending them to those who cannot or who will not pay for them from their own pockets, and, in our opinion, much more good would be accomplished than by the best course of collegiate instruction.

3. Without the invaluable aid of the well-conducted journal, ten good lecturers, going over the State eight months of the year, not so much to talk about "phosphates," and "chlorine," and "primary elements," and "alluvium," and "diluvium," &c., as to present simple facts and successful experiments, and to give judicious advice to those who have not self-confidence, would do more good than a dozen colleges which should require an annual payment of $200 or more from each of those who are placed under such instruction.

We regard well-informed itinerant lecturers, in the present condition of our farming population, as altogether the most efficient means of securing agricultural reform. What has this kind of effort done in temperance! It would do much more in agriculture, for it would have to contend not so much against established and determined prejudice as against ignorance and timidity. These teachers would visit the farmer in his home, and walk with him over his fields, and point out to him his important mistakes, and encourage him with assurances of success. Various modes of exerting a good influence would present themselves to such men.

Unite the free or the general circulation of journals and the constant efforts of good lecturers, and we should have, in our judgment, the most efficient reformatory measures that can be devised.

4. We would add to these, well-arranged county and State shows, where farmers would congregate to exhibit the results of their more successful experiments, and learn, also, the experience of others who tried processes different from their own. But this should not be the whole. Ministers meet in "Associations," &c., to discuss points of doctrine or of practice. Physicians do the same. Musical conventions are becoming common, where lectures are delivered, and each member gives his views. Teachers' conventions afford an opportunity to listen to a studied and formal presentation of some useful topic, but this is followed by extempore discussion, in which all are invited to join.

So it should be in agricultural meetings. Let the doors of our hospitable farmers be thrown open for two or three days, or a week, to those who will attend such gatherings; let mutually pleasant and profitable acquaintances be formed; successful, and even unsuccessful, experiments be "talked over," both in and out of doors, and ideas be interchanged in various ways and on a variety of subjects, according to circumstances. They all might sit at a common table, furnished with *material* brought from the homes of those who are assembled; imposing only upon the wives and daughters of the place where they meet, the labor of its preparation: or, still better, in one view of

the subject, these farmers might bring their own wives and daughters, who should each show her own skill in preparing the table; or the labor of cooking might be done at home, so far as meats and pastries, &c., are concerned, while in the coffee, and tea, and chocolate, &c., each might exhibit her own skill: and we add, there is no branch of this subject in which there is more universal need of instruction. Good coffee and good tea and good chocolate are among the *rarities* of the country. Do this, or any thing like this, and your colleges will, by and by, find they must go into the farm-house for the matter of their lectures; and writers on agriculture, to be read, can only retail what they learn directly from the practical farmer. In fact, what other than this is now the condition of things on this subject?

CANALS IN INDIA.—IRRIGATION.

Bayard Taylor gives the following description of some works of this sort in the East:—

"The Ganges Canal has rarely been heard of out of India, but it is one of the grandest undertakings of the present day. It is being constructed under the direction and at the expense of the Government, mainly for the purpose of irrigating the level fertile tracts between the Ganges and Jumna, but also to afford the means of transporting the productions of the country to the head of navigation in the former river, at Cawnpore. The labor of more than ten years has already been expended on it, and four or five years more will be required to complete it. It will be 80 feet wide, varying in depth according to the season, but probably averaging eight feet, and, including its numerous branches, will have an extent of 800 miles! It taps the Ganges at Hundwar, and returns to it again at Cawnpore, a distance of more than 400 miles. The total cost, when completed, will not fall much short of £2,000,000, but it is expected to yield a return of £500,000 annually. This calculation is based upon the success of the East and West Jumna Canals, which are comparatively on a small scale. The former of these was finished in 1825, since which it has paid all the expenses of construction, together with an annual interest of 5 per cent. thereupon, and £320,000 clear profit. The latter, finished a few years since, has paid the cost and interest, with £30,000 profit.

"The use of the water for irrigation is not obligatory upon the inhabitants, but they are generally quite willing to avail themselves of it. There are three ways in which it is furnished to them: First, by villages or companies of cultivators contracting for as much as they want; secondly, by a fixed rate per acre, according to the kind of grain, rice being the most expensive, and cotton the cheapest; and thirdly, by renting an outlet of a certain fixed dimension, at so much per year. Along the Jumna Canals, the people do not wait, as formerly, to see whether the crops will be likely to succeed without irrigation, but employ it in all seasons, and are thereby assured of a constant return for their labor. The Ganges Canal will be of vast importance in increasing the amount of grain produced in Hindostan, the design of the Government being to *render famine impossible*. It is to be hoped that such a dreadful spectacle as the famine of 1838, when hundreds of thousands perished from want, will never again be seen in India. That such things have happened is the natural result of the tenure by which land is held and cultivated. The Government is the proprietor, and the *zemindars*, or tenants, pay 75 per cent. of the assessed value of the products. The land is sub-let

by the zemindars to the *ryots*, or laborers, and these, the poor and ignorant millions of India, of course gain little or nothing beyond a bare subsistence. If the crops fail, they have nothing at all. The Ganges Canal will therefore, to a certain extent, prevent famine, by assuring perennial crops. It will enrich the Government, because, in addition to the sale of the water, it will increase the rent of the lands as they become productive, but it will very slightly mitigate the condition of the ryots.

"The greatest modern work in India is the Canal Aqueduct over the Selanee river, at this place. It is entirely constructed of brick, and, including the abutments, is about a quarter of a mile in length, by 180 feet in breadth. There are about sixteen arches of about seventy feet span, and rising twenty feet above the river, the foundations of the piers being sunk twenty feet below the bed. The arches are four feet thick, in order to support the immense pressure of such a body of water. Hundreds of workmen are at present employed on the structure, and a small railroad has been laid down for bringing the materials. A locomotive was imported from England, but, through the neglect of the native firemen, soon became a wreck. During the short time it was in operation, a great number of accidents occurred. It was found almost impossible to keep the natives off the track. Their stupidity in this respect is astonishing. If you have a hard heart, you may run over as many as you like in a morning's ride, for they will assuredly not get out of your way unless you force them to it."

CITY AND COUNTRY.

"If the towns grow, the country grows. Show us an old-looking, rickety, paintless, dilapidated town, and we will show you a country of shiftless and thriftless farmers near it."

So says the editor of the *Prairie Farmer;* and among the volumes of good things that have come from his pen, he has never published a more truthful sentence, nor one more worthy of serious thought. "Town *vs.* country," "country *vs.* city!" Did you ever see the two blades of a pair of scissors worrying and bullying and fighting each other? It is not the head saying to the foot, "I have no need of thee," nor the "vessel of honor" turning with disdain from the "vessel of dishonor." There is no such inequality of position. If one presents to the eye piles of brick and stone, with markets and merchandise, the other spreads out fields of green, and quiet and tasteful homes; and the land waves its golden harvests in graceful obeisance to the traveller from the city, as if it would bid him welcome to the spot where the sustenance of the world is grown, and to the families to whom he owes much of his own prosperity.

No, they are not head and tail, nor lord nor peasant; they are rather the two arms of the lever by which the world is moved. They are the two noble steeds, unlike in regard to color, form, &c., which lift out of the fog and darkness the chariot of day, while neither, alone, would give motion to its ponderous wheels.

Without the city there is no market. Without the country there can be no city. Cities do not grow at hap-hazard. They will not extend their busy streets and marts at the command of men's fancy or caprice.

Nor, on the other hand, can the country flourish without cities. Where are our rich farmers? Invariably where they have access to large markets. Exceptions are such only in appearance. The ancestor from whom the

wealth was first inherited, if a farmer, acquired his profits where he could sell readily the products of his land.

Who constitute the throngs in the streets of cities? Many of them are strangers from the country. Who occupy the stores and counting-rooms of the city? The former companions and schoolmates of those strangers, if not their brothers and sisters, who chose to try their fortunes in a new and more venturesome pursuit.

Does the agricultural State of Vermont wish to raise large sums with which to endow her colleges, where do her agents go? Among her own sons in Boston and New-York. Does agricultural New-Hampshire wish to get up a splendid social feast, where the natives of the State can assemble and renew old acquaintances, and revive old associations, and honor dear memories? What more fitting place could have been found than that selected in the city of Boston?

Would her "only seaport," which has sometimes been thought to look down with an air a little too lordly upon the interior portions of that State, assure themselves of a "glorious Fourth," that shall not ever be forgotten? Who could better have made assurance sure than her sons in Boston and New-York for the day just approaching? They will not fail. When were they known to fail?

We once kept the tally for the President of that old "aristocratic" institution, "The Old Massachusetts Bank," himself a country minister's son, as he counted over the Boston boys among the (then) sixty Boston members of the State Legislature, and the *whole sum total* was less than a dozen. The rest were from the country, and yet there is sometimes a jealousy between city and country! If this is reasonable, then a house may properly be divided against itself—father against son, brothers and sisters, mothers and daughters, cousins and uncles, and even betrothed lovers against each other. Such a contest is essentially a family feud.

In the olden times, and even in many cities now scattered over the Eastern Hemisphere, the flocks and herds which, during the day, are led out into the broad fields of the rural districts, at night are collected around or within the walls of the city for protection. This is an apt illustration of the relative position of the country and the city. When these shepherds and herdsmen are ready to conspire together to destroy that which protects them and their flocks—to kindle a blaze under the walls and roofs which afford them comfort and shelter, then may jealousies spring up and be fanned into bitter quarrels and angry fightings, and all contend manfully for the common destruction of all classes.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

THE DIGNITY OF LABOR.

MESSRS. EDITORS:—No one will deny the necessity of manual labor, yet too few are willing to award to the toiling millions that position in society to which they are justly entitled.

Without effort and without labor nothing can be accomplished. The heavens might pour forth refreshing showers; the gentle dews descend, and the sun send forth its genial rays; the seasons regularly return and cover the face of the earth with verdure; but without the effort of man to profit by the bounty of Omnipotence, all would be in vain. By the hand of the

laborer the forest falls, seeds are planted in the ground and yield many-fold for the sustenance of man.

The artisan erects comfortable dwellings, builds ships, spreads an iron network over the face of the earth, and provides those means of conveyance to facilitate intercourse which are fast rendering the inhabitants of the earth one people, and enabling them to exchange the productions of one clime for those of others. By the skill of the mechanician, machines are constructed to relieve man from much laborious exertion and from too heavy burdens. It must be evident to all who will bestow any thought upon the subject, that those who apply the powers that the Creator has bestowed upon them to some useful purpose, are benefactors, and entitled to the respect of the good and the wise, and must receive the approving smiles of Heaven. And, on the other hand, those who spend their time in idleness are unworthy of the society of the virtuous, recreant to their duties, and rebellious against the laws of nature and the commands of Heaven. These undeniable truths being admitted, we propose examining into the cause of the insignificant position awarded to the sons of toil, and the inadequate remuneration for their services.

The greatest obstacle in the way of progress for the laborer, and of his advancement to the dignity and honor to which he is justly entitled, may be attributed to his own faults—his voluntary acknowledgment of inferiority, and his obsequious cringing to those who have wealth and station. And especially does he lower himself when, lacking self-reliance, he enters into combination with others to effect that which his own merits ought and, if properly presented, would command. The operation of "Trades' Unions" has had a most deleterious effect upon the interests of the most worthy and useful members of society. The sober, industrious and intelligent man who joins one of these Associations, lowers himself in the estimation of the public, and often in his own mind, to the level of the most intemperate, slothful and ignorant member of the Society to which he is attached.

The judgment of the world, and often of individuals, is ungenerous and unkind. Many a well-disposed person, with the purest motives, has left honorable and profitable employment on account of some imaginary wrong inflicted upon a worthless member, and in doing so, has unintentionally incurred the disrespect of those who previously honored him for moral worth and unimpeachable integrity. The worst feature of these Associations is their effect upon individual members. We venture the assertion without fear of contradiction, that the first stipend any person ever received, while in health and able to earn a living, from any Association, lowered him, in his own estimation, from the dignity of an independent citizen to the condition of a feeder upon charity. Such are the inevitable effects of Associations that attempt to control the conduct of individuals in their business transactions with others. No combination ever established as high a rate of wages as could be commanded, at any and all times, by the best workmen of the art; nor did they ever put the rate so low but that the poorest workmen would be more than paid. Consequently, the whole burden falls upon the best members, and the benefits are received by the most worthless hangers-on of those Associations. Another evil effect of these Associations among mechanics is the tendency that strikes among workmen have to induce employers to take incompetent men to fill the places of those who, in obedience to the rules of the Society, leave their situations. We must not be understood as arguing that the laborer is overpaid; on the contrary, the wages received by the industrious workman hardly ever approach a just reward, and often are

entirely insufficient to yield the necessaries of life for himself and family. If we believed that these Associations were calculated to increase the respectability, intelligence and comfort of the members, they would receive our hearty concurrence and support; but they must not be confounded with purely Beneficial Societies, those that allow their members to work at such prices as they see fit and can obtain; and when the resources of the members of such Societies are exhausted, they can conscientiously and without humiliation, receive assistance from the common treasury. But to compel a member to quit a situation where he receives for his services eight, ten, or twelve dollars per week, and accept from the funds of the Society three or four dollars, and spend his time in idleness, with opportunity and example to contract habits of intemperance, is at least a doubtful policy, the consequence of which should receive the careful consideration of all those who are disposed to unite their interests in the cause of human amelioration.

"The laborer is worthy of his hire;" and he who unjustly withholds the hard earnings of an employee is a robber, and no less a criminal than he who, under cover of night, robs his neighbor for gain. And little less guilty is that man who, while overloaded with wealth, seeks to wring from the poor laborer the greatest possible amount of work for a miserable pittance.

J. S. G.

Media, Delaware Co., Pa., June 25, 1853.

AMERICAN MINES.

The mining interest of these States is just beginning to be developed, and we do not hazard much in prophesying that those of iron and lead and copper, &c., will be of more substantial value than those of gold and silver.

We intend to give these matters especial attention, and invite those interested to send us statements of facts for our pages. A correspondent of the *Tribune* writes thus of the Copper Mines of Lake Superior:

"The Norwich is situated on the west branch of the Ontonagon river, about 18 miles from the mouth, and 12 miles from Collins' Landing. It is a well-defined vein, and has been traced and partially opened for more than half a mile in extent. The lode is well charged with copper, from good stamp ore to masses of 4,000 lbs. One shaft has been sunk to the depth of 245 feet on the vein; another 80 feet, and two others to an inconsiderable depth. The ten-fathom level has been extended about 240 feet; the twenty-fathom level 220 feet; the upper part of the mine has been partially stoped out, producing about 800 tons of stamp and barrel-work, and 30 tons of masses. There is sufficient copper in sight to guarantee a shipment of 75 tons this season without robbing the mine. They are driving a working adit level 440 feet in length, which will give a back of 250 feet, and enable the Company to work the mine to great advantage. This adit will be completed about the first of August.

"The Windsor is situated about half a mile east of the Norwich. One shaft has been sunk 105 feet; two others about 80 feet each. Levels have been extended 290 feet, but there is not sufficient work to develop the mine. It produces good stamp and barrel-work, and a few small masses. This mine is worthy of a large expenditure to prove it up.

"The Ohio Trap Rock Company are working on the north side of the Norwich Bluff. They have sunk one shaft 260 feet, one 200 feet, and several others 10, 20, and 30 fathoms. Levels have been extended for 200 and 300

feet; an adit level driven 150 feet, and cross-cuts north and south. It does not present a very flattering show at the point where they are now working, although good stamp and barrel ore has been raised. This Company own a large and good tract of land, have erected stamps, and are prepared to work with vigor when they get a paying mine.

"The Derby is about five miles west of the Norwich. They have been working two veins on the south side of the bluff, both of which are of very fair promise: one shaft is down about 30 feet; an adit is being driven in the course of the vein, which will give a back of 225 feet. There is every indication of this making a paying mine.

"The Hudson is a half mile west of the Norwich, and has sunk a shaft 40 feet, on what appears to be the same vein that the Ohio Trap Rock are working on the other side of the bluff. It is a good show.

"Yours, W. D. K."

INCREASE OF IMPORTATION.

THE New-York *Journal of Commerce* says, that the total receipts of dry-goods at this port since January 1st, is $12 945,509 greater than for the corresponding five months of last year, and $8,592,141 greater than for the same period of 1851, as will appear from the annexed comparison:

IMPORTS OF DRY-GOODS AT THE PORT OF NEW-YORK DURING THE MONTHS OF JANUARY, FEBRUARY, MARCH, APRIL, AND MAY.

ENTERED FOR CONSUMPTION.

	1851.	1852.	1853.
Manufactures of wool,	$5 513.126	$4.588.869	$8.495 117
" cotton,	5,355.438	4,295.267	6.718.790
" silk,	10.296 506	8,156 557	13.395.311
" flax,	3,291.168	2.643 389	3.799.591
Miscellaneous dry goods,	1,742.901	1,858.582	2,539.874
Total,	$26,199,139	$21,542,604	$33,948,683

WITHDRAWN FROM WAREHOUSE.

	1851.	1852.	1853.
Manufactures of wool,	$474 386	$779,610	$498,791
" cotton,	822.057	1,004.230	554,598
" silk,	520.655	1,163,650	671.656
" flax,	332.322	566.149	117.230
Miscellaneous dry goods,	220.667	219,324	201.758
Total,	$2,370.087	$3.732 963	$2.044.033
Add entered for consumption,	26,199.139	21.542.604	33,948,683
Total thrown on market,	$28,569,226	$25,275,567	$36,992,716

ENTERED FOR WAREHOUSING.

	1851.	1852.	1853.
Manufactures of wool,	$589.058	$683,435	$767,202
" cotton,	763.854	536 073	610,254
" silk,	861,037	1,434 510	826,778
" flax.	322.561	187.772	160,294
Miscellaneous dry goods,	190,080	187.967	204.659
Total,	$2.726.590	$3.029,757	$2,569,187
Add entered for consumption,	26,199.139	21.542 604	34.948,683
Total entered at port,	$28,925,729	$24,572,361	$37,517,870

ANATOMY OF THE HORSE.

The following abstract of one of Dr. Slade's lectures, as reported in the *Traveller*, will be useful to all those who have the care of that noble animal:

"The posterior extremities are divided into the haunch, the thigh, the hock, leg, and foot, being the bones concerned in forming this portion of the animal. The hind legs of the horse resemble very much the legs of man. The branch or pelvis forms the posterior boundary of the trunk, and is connected with the spine. It presents a large, irregular cavity, open before and behind, and contains the urinary and genital organs, with a portion of the intestines. It is composed of four bones. Two of these, called the haunch bones, or *ossa innominata*, form the lateral and inferior portions of the pelvis. Each of these two bones consists of three bones, termed the ilium, ischium, and pubis. The pubis is the smallest, and sustains the bladder, and uniting with the opposite bone, forms the symphisis pubis. From the loins to the setting on of the tail, a line should be carried almost straight. The width of the haunch is of great importance, as it affords more room for the attachment of muscles.

"The thigh bone is the largest and strongest in the skeleton, is short and thick, and has prominences, hollows, and roughnesses for the attachment of powerful muscles. The lower extremity is very complicated, and presents two prominences which are received into corresponding depressions in the next bone, and a depression in front in which the bone of the knee plays as over a pulley. The stifle bone, corresponding to the knee-pan in man, glides over the pulley-like surface in front. This and the two prominences below and behind constitute the stifle joint.

"The leg bone of the horse, or the lower bone of the thigh, as it is called, is composed of two bones, the tibia and fibula. The tibia is the largest, and in front reaches from the stifle to the back. The fibula is very small, and reaches a third of the way down.

"The lower bone of the thigh forms an angle with the upper one, exactly the reverse of the one between the upper one and the pelvis. The object of this is to obviate concussion, on the principle of the spring, and also to give a favorable direction to the muscles. This part of the thigh should be long, in order that the contraction of the muscles may be as great as possible.

"The inferior extremity of this bone enters into the formation of the hock joint, which consists of three sharpened projections and two deep articular grooves—one of these projections separating the grooves and the others forming the lateral prominences.

"The line of direction below the hocks should be perpendicular to the fetlock. The weight and stress will thus be equally diffused not only over the entire back, but also over the pasterns and foot. Some horses have their hocks closer than usual to each other, and the legs and feet turn outwards. These animals are said to be cow-hocked, and are thought to have considerable speed. This may be the case, but the advantage gained is more than counterbalanced by many evils to which they are liable, such as spavins, windgalls, and curbs.

"The other bones of the hind legs are very similar to those of the fore legs which have been described.

"The muscles of the posterior extremities are more powerful than those

of any other part of the frame, and provision is made to confine them in their respective positions, and to contribute to their security and strength. When the skin is stripped off, the muscles are not found naked, but they are covered and closely compacted together by a dense, strong membrane which is called a fascia.

"The diseases of the posterior extremities are numerous.

"The stiff joint is often sprained, and sometimes dislocated. Sprain is indicated by swelling, and is of little harm to the horse. Dislocation is much more serious, and often the horse never recovers, but always remains lame. Thorough-pin affects the hind legs, and is similar to a windgall. The treatment is bandaging, blistering, or firing if necessary. It is not a serious disease, but should be watched, lest the causes which produce it should weaken other parts.

"There is sometimes a sprain of the hock, or inflammation of that part of the leg, which may be abated by applying blisters and allowing the horse to rest. Sometimes it will not yield to treatment; and although a horse may work moderately for three or four years, yet when called on to do any extra day's work, lameness comes on and may always continue.

"The ligaments of the leg sometimes become sprained, and then arises a tumor called a 'curb.' Blistering should be tried, and sometimes firing is necessary. A horse affected with the curb should be regarded with suspicion. The swelling is best observed when looking sideways at the leg. A horse with the curb should be allowed to rest at least a month after the treatment is commenced. It is often an hereditary disease.

"Bone-spavin is a very common disease. When it first comes on, the horse is quite lame, and suffers great pain. Soon both disappear, the parts becoming used to the tumor on the hock joint. If the disease does not interfere with the ligaments, it is of little disadvantage; if it does, the disease is more serious. It is a peculiarity of the spavined horse that when first taken out he is very lame, but after travelling a while, he becomes almost entirely free from the limping. Spavined horses are best fitted for farming, where no great speed is needed. Little can be satisfactorily said of the treatment of spavin. Continued blistering sometimes is effectual.

"A disease sometimes affects the membrane between the bones of the hock joint. It causes lameness, but little is known of its character.

"Swelled leg arises from irregular exercise and seldom use. If not properly attended to, it may result in trouble. The limb should be bound firmly, and physic applied.

"'Grease' is a disease arising from wetting the legs and then allowing them to dry. When the hind legs are washed, they should be well wiped. The 'grease' appears as an itching near the top of the hoof, and cracks often are found as the result of the disease. The disease often debilitates the horse, and he becomes useless. In carriage and pleasure-horses, the hair on the fetlock joints should be cut off. In cart-horses, the hair should be allowed to remain, and the legs should not be washed, but brushed.

WOOL-GROWING AT THE SOUTH.

THERE seems to be a disposition in a few of our friends in Virginia to enter upon this business. We rejoice to see this. They must succeed in it, far better than in the modes of farming hitherto prevalent in that State. The *Richmond Dispatch* has a short article on the subject, in which he says:

"Virginia has stood aside, and seen the wealth derivable from the growth of wool absorbed and appropriated by her neighbors. But a new era has been opened, and we boldly predict that our State will shortly rank among the first in furnishing wool for the marts of the world. We saw, yesterday morning, a sample of fine Saxony wool grown in this State, that would bring, in any market, from 85 to 90 cents per pound. We also looked over some samples of Merino, grown within 20 miles of Richmond, that brought 60 cents in this market. The grower remarked, that at such rates he could not engage in a more profitable business. It seems that he had entered upon wool-growing merely as an experiment, and had only 170 sheep in his flock. For this season's clip he received about $350. He informed us that he had 100 lambs for sale, for which the butchers had repeatedly offered $5 per head, but that, as they were full-blooded Merino, he had sold most of them at $10 each, and expected no difficulty in selling the remainder at the same price. At this rate his profits for a single year will be from $750 to $1,350 upon 170 sheep! On being asked the annual cost per head of feeding them, he replied, *forty cents;* but added, that since their manure was worth three times that sum, he concluded that his wool had really cost him *less than nothing.* Considerable attention is now being paid to the growth of wool upon the poorer lands of Fairfax and Prince William, and the business is steadily increasing throughout the whole Piedmont region, from Harper's Ferry to the North Carolina line. We doubt not that even in the tide-water sections of our State, the growth of wool will be found profitable."

Let many others of the Ancient Dominion go and do likewise.

ROTATION OF CROPS.

In English papers, this is a constant subject of discussion. The precise order of rotation, and the number of years to be occupied by the series, for producing the greatest crops, are regarded as questions of very great practical importance. In that country, where the lands are highly cultivated, it may be deserving all the attention given to it. Some crops seem to possess the power of rendering available elements over which others have no power. Their roots penetrate more deeply, or are more abundant, or perhaps have a peculiar organization which gives them some special adaptation to appropriate nutriment inaccessible to other plants.

The same question is sometimes brought before us in our own journals, and even here it is no doubt worthy, oftentimes, of careful consideration.

But we would guard our readers against one grand mistake. When a soil contains all that is necessary to make it fertile, a given crop exhausts the available portions of one or more of its elements much more rapidly than it does others. Hence the repetition of the same crop for several years may in the end leave the land utterly destitute of those given elements, while it contains an abundance of all others. When this is the state of things, it is obvious that it cannot produce another similar crop, while it may be able to produce one of a different character or requiring different elements.

But what is the result of thus tasking the land? Continuing the same crop, a small one only can be obtained; but by changing it, it may, for the time being, be more productive. But what is the final consequence? *While manure is withheld*, instead of being destitute of one, it becomes destitute of several elements, and if the process is continued, is made totally barren, and

requires a general and thorough renovation before it can produce any thing.

We have seen this course pursued by tenants for a term of years. Having exhausted the power of the soil to produce one growth, they plant another with tolerable success. This exhausts in its turn, but in a different way, and ere long there is no crop for which it has the necessary aliment. But his lease has expired, and he has no further use for the land. The owner can do with it as he pleases.

The first course alluded to is like driving away one swarm of insects with which your horse or yourself may be covered, to make place for a fresh supply of others as hungry as the first were at the beginning, and so progressing from bad to worse. But the second, the process of rotation without manure, is but another illustration of sacred writ: 'that which the cankerworm hath left hath the palmerworm eaten." Thus, corn requires more silex than peas; peas and kindred plants more nitrogenous manure than cucumbers or melons, &c.

Ordinary farmers overlook one very important feature in the system of rotation. We refer to a season of rest and of ploughing in green crops, with which it may be qualifying itself for abundant harvests in future years. They see the evil of cropping the same growth year after year; their scanty harvests proclaim this in a voice that cannot be unheeded; but if they can change the crop and receive in return a bare recompense for their labor, they are satisfied. Thus they go on, till at last they cannot gather even a crop of beans. What then? Do they thoroughly manure, and allow a season of rest? Not at all. They sow grass seed, perhaps; and mowing the growth of every year till they find this unprofitable, they turn it into pasture, and require their cows and oxen to find on it what they could not find—a liberal supply of feed. It is thus we imitate the habits of others, leaving out, partially if not exclusively, those very things which give value to the general system, omitting that which can alone secure for any growth an abundant harvest.

But even this season of rest is not enough. Manures, as we have seen, are as essential with a rotation of crops as without. The kind of manure may be modified with the nature of the growth, but the supply of some manure, and that which is suited to the condition of the soil, is indispensable in any system of farming, and in the growth of any variety of crops.

The rotation system has been thought unwise, because unnatural. If left to itself, each plant scatters its seed around its own roots, thereby securing a permanent succession of the same growth. But in this case, nature does what the farmer does not. She returns the entire growth to the same soil which produced it, with the addition of a large amount of organized elements derived from other sources, as air, water, &c. But, again, this is not always true. In forests, when the growth is cut off, we often see a different species growing in its stead.

FISH AND BONES FOR MANURE.

Every one knows that bones are exceedingly valuable as manure, but many are deterred from using them by the labor and cost required to prepare them for the soil. Their value consists chiefly in the phosphate of lime which they contain.

An interesting experiment is detailed by Mr. C. L. Flint, in the *Journal of*

Agriculture, showing how easily fish can be converted into manure. It answers, as will appear, the same purpose, essentially, as guano. Mr. Flint says:

"We have ourselves formed a compost, which for fertilizing properties is nearly equal to guano, by dissolving fish with sulphuric acid. The process is so simple, and the result so valuable for those living in the vicinity of the sea-shore, who can procure fish in considerable quantities, that we will state it, in the hope that it may prove of value to others. Sulphuric acid can be procured at about three cents a pound, more or less, depending upon circumstances. We applied the sulphuric acid from the laboratory to the flesh and bones of a large codfish, simply pouring the liquid in a small quantity over the fish. In less than two days the decay had been so rapid as to be distinctly perceptible; when a little more acid was sprinkled over the fish. In less than a week, flesh and bones were in a state of decay, and shortly after, we mixed it with a little earth, and applied it around the roots of plants. It caused them to grow with the most astonishing rapidity.

Circumstances did not allow us to try the experiment on a large scale, but it is easy to perceive how simply it could be done. Let fish, which can ordinarily be procured, in summer, in large quantities around the wharves, or the refuge of the fish market, consisting of heads, bones, &c., be first procured. Dig a hole in the earth, of any desirable size, in the shape of a bowl, into which put all such animal substances as can be procured. Obtain from the apothecary or manufacturer good sulphuric acid, (vitriol,) and dilute it slightly with water. The rapidity of the decomposition will be in proportion to the strength of the acid. We used it undiluted, though for practical purposes it would be better to dilute it somewhat,—perhaps four or five, or even ten parts water to one of acid;—additions can be made from time to time, as convenience may dictate; and the application of acid renewed in any quantities. A few experiments may be needed to ascertain the most economical management of these quantities, &c. No loss of any valuable properties, like ammonia, &c., need be feared from exposure to the air; though if a great rain should occur soon after the application of acid, a fresh application should be made. The former one would be too much diluted.

"After this mass has lain some days, till the bones are sufficiently dissolved, sand or loam may be added, and the whole mixed together. It will now be in a state to be used, and may be applied on the surface, or ploughed in. If used in the garden, it will be convenient to cover it slightly with the spade. Here has been produced a rapid decomposition of a substance containing a very large amount of phosphate of lime, the bones of fish being mostly composed of it, and the flesh containing it in a state very easily soluble. This decomposition has been attended with no great difficulty; no stench has been produced, no nuisance caused. All applications of lime to this simple compost should be carefully avoided.

"Any other than fish bones may be used with equal success. We mention them in particular from their containing so large an amount of phosphates, and being so easily attainable. We have no doubt this mode of forming a very rich fertilizer will be tried with great success by gardeners and farmers who have the enterprise to use all the means in their power to enrich the soil, and who prefer to manufacture their own guano to paying the expense of freight, and the profit which the importer and the retailer expect to realize; at the same time running the risk of frauds, which can hardly be detected without an expensive analysis.

"The use of guano is attended with much labor in the preparation, and

some danger in the application; nearly as much, perhaps, as the whole trouble of forming this rich compost of phosphate of lime will cost. The substance produced as above described is very easily soluble in water, and thus acts very soon, while bone-dust, being less soluble, will be found to act more slowly, and, unless very finely ground, will scarcely be felt before the second year. All bones, however, contain a large amount of phosphate of lime, and are easily prepared for use by the farmer, or obtainable at no very great expense at the manufactories."

CONSUMPTION OF COTTON.

THE following table was published by Messrs. Du Fay & Co., of Manchester, and exhibits a view of the quantities of raw cotton consumed by various countries, from 1836 to 1852 inclusive. The figures express the number of millions of pounds.

COUNTRIES.	1836	1837	1838	1839	1840	1841	1842	1843	1844	1845	1846	1847	1848	1849	1850	1851	1852
Great Britain,.....	350	369	435	362	473	422	462	531	543	597	604	425	591	627	584	643	745
Russia, Germany, Holland, and Belgium,.....	57	58	61	48	72	65	78	82	86	96	97	105	112	160	133	118	172
France (including adjacent countries).....	118	121	133	110	157	154	163	152	146	158	159	126	127	186	142	149	199
Spain,.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	29	34	44
Countries bordering on the Adriatic,.....	28	32	26	26	28	29	38	44	26	38	39	31	29	47	45	45	55
United St. of North America,	86	82	92	103	111	115	105	131	143	158	175	175	209	205	188	158	232
Sund's, Mediterranean, &c,,	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	23	29
Total,.....	639	662	747	649	841	785	846	940	944	1047	1074	862	1068	1225	1132	1175	1481

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

CHARACTER AND POSITION OF THE FARMER.

MESSRS. EDITORS:—At a fair held at Hyde Park, Lamoille county, in 1849, an address was delivered by a farmer, who complained that the class to which he belonged were neglected and looked down upon by professional men. I write this to assure him and the rest of his class that there is one professional man who does not look down on them. Our Declaration of Rights avers, we are all born equal; and I contend, all the difference with us (aside from degrees of intellect) is our morals. I esteem myself as good as any man, if my morals are of as high a grade. It is *not* the case in our republic that one man is born a *prince*, and the other a *peasant*. I was inured to farming to the age of twenty; have worked in the black pines two weeks at a time; was familiar with all kinds of agricultural labors. Farmers are indispensable to a community; prosperity cannot attend us without them. Professional men must look to them for their bread. I wish this to be borne in mind by gentlemen, as well as by coxcombs. The *American* farmer is the most independent man on the globe. He is the *lord* of the soil. Taxes are trifling here in comparison with countries where there is a *crowned head*, a nobility, and an established priesthood to support; and the greatest of all curses is the tithe system. The clergy assist the *despot* to keep the peasantry in ignorance and servitude. Their *teachings* are, *fear God and honor the King*—his *sacred* Majesty—his most *gracious* Majesty—the *divine* right of kings—I would as lief say *divine right of devils!* The

farmer is dependent on many of his fellow-men. He cannot begin his work until he is furnished by the smith with an axe to fell his forest; and as he progresses with his labor, he must draw more largely on the smith and other mechanics, who are all useful in their sphere, and we cannot dispense with their services. The farmer must exchange his bread for the implements he needs; and thus he feeds the mechanic, which is a mutual benefit. We all may be of use in some station, and each be of benefit to another. I must consider agriculturists the most useful of men. They enjoy the best health, being nearly exempt from sickness; and would he study the laws of his being, and practise them, he would seldom lose a meal or an hour's labor from indisposition. Inhaling the pure air impregnated with the delicious effluvia of the thousand blossoms whose fragrance conduces to health and longevity, the out-door laborer is the most healthy and long-lived of any class of men. My grandfather was a farmer, and lived to his ninety-fourth year; my father is a farmer, is now living in his ninetieth year, retaining a good degree of health and intellect. The farmer is also the most moral class in community. There is no other calling whose ethics will compare with those of the tillers of the soil. It is *seldom* a farmer is convicted of gambling, libertinism, or any heinous crime. It is not common for them to practise tippling and drunkenness. There are ten men of other callings that are guilty of those and other misdemeanors, to one farmer. Well informed farmers would form for us a better code of laws than professional men; but with due deference, and *great* regret, I am compelled to say that, as a body, they are deficient in the science of agriculture, and have not that general knowledge they can and ought to possess. There are many honorable exceptions, and these are fast multiplying; but there are many *now* who "carry a stone in one end of the bag," because their fathers did, and aver they want no book-farming. They need *chemical* and *agricultural* knowledge: and if they neglect to obtain this for themselves, let us urge them to secure it for their children. Convince the farmer that it is of *greater* utility to put money into the heads of the young than into their pockets, and the work is nearly accomplished. I have a great desire that the rising generation shall cultivate their minds, become familiar with the sciences, have a general knowledge of themselves and that which surrounds them, be capable of doing their own thinking, and have the full exercise of the reasoning powers which the God of nature has bestowed on them. Then the earth will be a paradise. Astronomy, Botany, Geology, Chemistry, and all the departments of natural history are important, but a knowledge of chemistry is indispensable to the farmer. He cannot cultivate his farm to advantage without it; but it is lamentable that so few are imbued with this necessary knowledge, and the number is still smaller that would pay one dollar for an analysis of their soils, which to them, in many cases, would be an advance of fifty dollars. They should know what soil requires lime, and what plaster, &c., &c.

I occasionally read an interesting communication from Professor Mapes. God bless him, and every other *man* who, by his labors, is attempting to benefit the human family! Farmers frequently complain they are not noticed by the people as they ought to be; that professional men, more especially attorneys, hold the offices. Let us look around and see where the difficulty lies. In New-England there are some twenty farmers to one professional man. Then you have the *power* in your own hands. Why do you not use it? Have you no *confidence* in your own class? You may answer, It is in part diffidence. The ostensible cause is lack of qualification or information, which you can and ought to possess. Many of you say, I have no time to

read. I think it is not so. How do you spend your long winter evenings? Sitting idly by your fire, or, what is far worse, at the public-house and shops in your villages. I know there are many honorable exceptions.

Should you spend the evenings of one winter in study, you might store a vast amount of information in your mind, which would be of vast benefit during your life; and this knowledge you can impart to others for their benefit, and not impoverish the original stock. By applying yourselves in this manner, and the wet days in summer, you may qualify yourselves for agriculture, legislation, or other useful employments. A well-informed "yeomanry is our country's pride." The State of Vermont has been very democratic. Our *Governors*, a majority of them, have been tillers of the soil ever since we have been a State. Our Legislature has usually had a majority of farmers, and it would be *greater* if you were better qualified. In that case, the artifice of sycophants and designing knaves would not influence you. I wish you to cast about and see where your power lies. It does not lie in your *hair* or *muscles*, but in your intellect; you will bear in mind, "*knowledge is power.*" My advice and entreaty is, that you set about so noble a work immediately. Books and periodicals are plenty and cheap, and time in abundance to read them. No man at this time has any valid excuse for ignorance. Qualify yourselves for legislators, then you are capable of judging of the acts of legislation—their merits or demerits.

Seven years ago last January, the citizens of Lamoille county organized an Agricultural Society. The first two years I served as President, and was more pleased, and experienced more gratification in serving the Society in that capacity, than any other offices I ever held, which have been but few; for I can safely say, I never was an aspirant for office. Our Society has been the means of improving all our domestic animals. *Good* breeders have been sought, and the value of the animals has nearly doubled. The value of fowls has quadrupled. Attention is aroused to the whole routine of husbandry. In the formation of our Society, I regret to state, not one half of the farmers could be induced to engage in the enterprise.

More agricultural papers are taken in the county than when the Society was organized, but not one half the farmers take them now. Every one should take some paper. Take the *Plough, Loom, and Anvil*, all who feel able; those who do not, take a cheaper paper; but take some one. I respect the farmer; I will encourage him by any means in my power; I *will* remember I obtain my bread by the sweat and labor of the industrious husbandman.

ARIEL HUNTON, A.M., M.D.

Hyde Park, Lamoille county, June 20th, 1853.

THE COTTON PLANT.

WE find a very lucid article on this subject in the last number (July) of *De Bow's Review.* The writer (E. U. S., of Charleston) had examined three varieties of soil, supposed to illustrate the average cotton soils of the Sea Island plantations. There were two specimens of each, one from the surface, and one from eleven or twelve inches below the surface. Of these soils, the writer says:

"The basis, and, indeed, almost the sole mineral constituent, is a fine siliceous sand, precisely identical with that which forms the sand beaches of our sea-coasts. They are enabled to support vegetation by the presence of a trifling proportion of aluminous earth, of oxide of iron and vegetable matter,

to which are added small quantities of the carbonates of lime and magnesia, and traces of phosphates and sulphates of the same basis, and of alkaline carbonat s; all of which, taken together, fall considerably below 10 per cent. The alumina, the oxide of iron, and the organic matter, perform an important service in the soil, by rendering it binding, and retentive of the moisture and gaseous matter which are essential to the nutrition of plants; while the salts enumerated, either wholly or in part, enter also into the general circulation of the vegetable growth, and are more or less there detained, as indispensable constituents of the same. But it is also clear that a soil thus constituted would be unfit for supporting vegetation, except for the fact that it is situated directly contiguous to the sea, and in a temperature nearly tropical, thus giving rise to an atmosphere perpetually loaded with moisture.

"Compared with inland and river-alluvion soils, the character of the Sea Island soil is very remarkable. The former rarely have more than 65 per cent. of silica, while their alumina and oxide of iron together often mount up to 10 or 12 per cent., and the proportion of organic matter and hygrometic moisture to 12 or 15 per cent.

"This contrast will indicate the direction in which the efforts of the planter should be made for the improvement of the Sea Island soils. Every addition he can afford to make of alumina, oxide of iron, and organic matter will raise the character of his soils."

The soluble matter in these soils consists of the chlorides of potassium, sodium, and calcium, and of the sulphates and carbonates of potash, and the sulphate of lime; all of which, however, will not equal one part in a thousand of the soil.

The following table gives the entire analysis, each column expressing the contents of one of the three varieties:

	A.	B.	C.
Silica, in the form of sand,	92.85	91.73	87 53
Water,	2 50	2 50	3.50
Organic matter, mostly vegetable,	2.75	2.75	7.50
Alumina and peroxide of iron, with traces of phosphoric acid,	1.40	2 30	0.12
Carbonate of lime and magnesia,	0.50	0.72	0.75
Peroxide of iron, probably the carbonate of iron,			0.60

The third variety, containing an excess of organic matter, possesses a much greater power for retaining moisture. Of this variety the author says:

"I should suppose that this soil is not at present adapted to the cotton plant. The organic matter is in excess, and in quality it is too nearly allied to that found in peaty land. Thorough drainage, successful cropping with corn, with the addition of the marsh mud and artificial manures, might prepare it for cotton. This opinion, however, is advanced with reserve, being wholly suggested by chemical theory, and may, therefore, require considerable modification in practice.

"I notice that the carbonate of magnesia is more abundant in this soil than in A. and B. This suggests the idea that magnesia may be an important ingredient in the cotton plant, even when compared with its sister element, lime; for soils which have been under long cultivation in cotton, although they still contain magnesia, nevertheless contain less of it than this newer and more unexhausted soil presents. It occurs to me, also, that one peculiarity of the Sea Island cotton may be owing to the larger proportion of magnesia in sea-shore soils, this element being ever plentifully derived from the waters of the ocean, in which, in one form or another, it is ever found dissolved."

A careful analysis of the cotton plant and the cotton seed, which were proved to consist of the same elements and nearly the same proportions, and also of marsh-mud, leads the writer to recommend the use of marsh-mud, for the reasons following:

"In the first place, the carbonate of iron, when blended with the soil, (in considerable quantity,) slowly turns into peroxide of iron, with the extrication of nearly one third its weight of carbonic acid, (which, it will be kept in mind, is the chief aliment of vegetation,) the peroxide of iron acting together with the alumina as a cement or binder to the loose grains of sand, and as an attracter of moisture and a retainer of nutritious gases. In the next place, the soluble substances present in the marsh manures are all of essential consequence to vegetable life; not to omit the organic matter, which is very considerable, and, in the case of the marsh-turf, very abundant, thus giving, as might be supposed, a preference to this over the marsh-mud, unless the difficulty of reducing it to a powder, and of incorporating it with the soil, presents an obstacle which overbalances the advantage arising from this superabundance of organic matter. Finally, it may be added that the silica or sand in the marsh manures is in a more comminuted condition than that in the soil, and therefore serves an important purpose in rendering the land to which it is added closer and more retentive of moisture.

"The question may now arise, Can the planter with advantage substitute any artificial manure or mixture for that of the marsh soils? The quantity of saline matter in it is certainly small—only about six pounds of common salt to the ton, about one pound chloride magnesium, and one of the sulphates of lime and magnesia; of insoluble constituents, twenty-three of carbonates of lime and magnesia to the same weight, and not far from 250 lbs. of good white clay. Of these ingredients, all but the clay could be cheaply obtained; nor would this be very expensive, as it exists in great quantity near Augusta, contiguous to the Savannah river; but I apprehend the great difficulty would still remain, and which would be nearly fatal to the use of the mixture. This would consist in its uniform application to the soil. In some cases it would be in excess, and in others in a corresponding deficiency; whereas, applied as at present, in a copious vehicle of fine sand, its good effects are every where visible. It may be concluded, therefore, that the Sea Island planter is in no danger of using the marsh manures to excess, nor have we any intelligent grounds for thinking that any substitute will ever be discovered which shall render their employment superfluous."

All the elements that are found in plants being essential to their growth, however small in proportion to other elements they may be, the writer concludes that the following kinds of artificial manures may be recommended to the cotton planter, viz.:

"First of all, the superphosphate of lime mixture of Prof. Mapes. It is composed of 100 lbs. bone-dust, 56 lbs. sulphuric acid, 36 lbs. Peruvian bark, 20 lbs. sulphate ammonia.

"Secondly, wood ashes; and the more these are mixed with charcoal, (if in a somewhat pulverized condition, in which state it is a valuable condenser of moisture and nutritive gases,) the better.

"Thirdly, compost, formed, as far as possible, of the following materials: stable manure, forest leaves, straw, (small quantities, perhaps, of rice chaff,) saw-dust, sweepings of houses and cabins, rubbish of old clay and plaster walls, lime, refuse of gas-works from Charleston, soot, drainings from stables and gutters, soap-suds, and refuse saline liquids of all kinds.

"It does not appear to me that the cotton lands require either quick-lime,

common salt, or gypsum. They certainly will not need the last-mentioned fertilizer, if the improved mixture of Prof. Mapes is employed.

"The more perfectly the compost is worked up together, and reduced by decomposition to the character of a powder, the better will be the effects it is capable of producing. If it could be treasured up for years, partly under the protection of a roof, and guarded from the action of the sun, its value would still be more highly enhanced."

FARM-WORK FOR AUGUST.

The farmer of a few acres may have a little space between his harvest of grass and that of grain, although with many the seasons interfere with each other, and one or the other is allowed to suffer. On our sea-coasts, access is had to the salt meadows, and the labor of cutting and curing this grass immediately follows that of the upland. Salt grass is much cheaper by the ton than fresh, although there is usually much more labor in getting it.

Thistles should be attended to without delay. Look again at an article on this subject in our last number.

Weeds may be pulled in large quantities for your hog-pen and compost-heap. Other offal should be collected for the same purpose. If this is *omitted*, do not complain, by and by, of lack of manure.

Cucumbers, and other plants for pickling, may still be sown, but they should be planted in a mellow soil, deeply dug, and kept carefully from drought.

Keep beds free from weeds, and in good condition for the growth of roots. Such plants cannot grow if compressed by a hard soil which will not be moved.

This is also a season for draining wet lands, and the muck which is thus dug out is wanted in your barn-yard.

Budding may also be done now and onwards, at the farmer's leisure.

Plant ruta bagas, or other turnips, in ground from which your peas or other early crops have been taken.

See that no weeds go to seed on your manure-heaps or in your barn-yard, else you will cultivate some crops that will not be profitable.

HISTORY AND CULTIVATION OF THE LUPINE.

We have given our readers an excellent account of the Mignonette, from the pen of Mr. Dennis Murray, a practical gardener of Boston, which appeared in the *Journal of Agriculture*. We find another, on the Lupine, from this writer, in the same journal. It is so rich in historic interest that we give it entire:

"The lupine, which we cherish as an ornament in our gardens, formed an important article in the husbandry of the Romans, who cultivated it not only as a subsistence for their cattle, but as food for themselves also. Pliny says he could not recommend any diet more wholesome and lighter of digestion than the white lupine when eaten dry. Their bitterness was taken off by soaking them in hot water, or covering them with hot ashes. The same author says that this food gave those who ate it generally with their meals, a fresh color and a cheerful countenance. The eating of lupines was also thought to brighten the mind and quicken the imagination. It is related of Protogenes, a celebrated painter of Rhodes, who flourished about three hundred and twenty-eight years before Christ, that during the seven years he

was employed in painting the hunting-piece of Talysius, who was supposed to be the founder of the state of Rhodes, he lived entirely upon lupines and water, with an idea that this aliment would give him greater flights of fancy. It was in this picture that he wished to introduce a dog panting, with foam at his mouth; but not succeeding to his satisfaction, he threw his sponge upon the painting in a fit of anger, when chance brought to perfection what the utmost of his art had failed to accomplish; for the sponge, falling upon the wet paint which he had intended to represent the foam, gave it so much the appearance of reality that the piece was universally admired. Another anecdote of this lupine-eating painter may be related, to show in what reverence the artists were held in those days: When Demetrius besieged Rhodes, he refused to set fire to a part of the city which might have made him master of the whole, because he knew that Protogenes was then working in that quarter. When the town was taken, the painter was found closely employed in a garden, finishing a picture; and upon being asked by the conqueror why he showed no more concern at the general calamity, he replied that Demetrius made war against the Rhodians, and not against the fine arts.

"The lupine is a plant that loves a poor, light, sandy soil, and it was much employed by the Romans as a manure for such situations, being ploughed or dug into the ground just as it began to blossom.

"Mr. Swinburn observes that lupines are still sown in the neighborhood of Naples, to manure the land, which are hoed up before they begin to fructify. This is also practised in the South of France, in poor, dry soils, as a meliorating crop to be ploughed in where no manure is to be had, and the ground is too poor for clover and other better crops.

The ancients named this plant lupinus, from *lupus*, a wolf, on account of its voracious nature, because these plants were thought to devour the fertility of the soil; and the name of lupinus is of great antiquity, and the seeds are said to have been used by the ancients in their plays and comedies, instead of pieces of money; hence the proverb, *Nummus lupinus*, a piece of money of no value; as that also of Horace: *Nec tamen ignorat, quid distent æra Lupinis.*

"To procure a succession of these flowers, they should be sown at two different seasons, that is, in May and June. The best mode of sowing them is by forming small clumps of them; but they should not be sown too thick, and they seldom succeed when transplanted. The following would make a good show in a flower-garden, viz.: *Albus*, white; *Varius*, blue and white; *Pilosus*, flesh; *Nanus*, blue and variegated; *Texensis*, deep blue; *Luteus*, yellow—all annuals. There are some very fine perennials of this family, which are *Lupinus polyphillus*, and variety alba; *Lupinus nootkatensis*, *Lupinus mutabilis*, *lucophyllus*, &c., that should be in every garden.

GOOSEBERRY CULTURE.

This fruit seems not to be appreciated. We regard it as one of the finest of our climate. It is sometimes found to fail from mildew or other causes, but by consulting nature, good success in their cultivation is almost certain.

The gooseberry requires a cool situation, considerable shade, and a moist soil. Salt has a good effect upon its growth. There is a great choice in the varieties, but the poorest is better than none, and amply repays its cost of cultivation.

BUDDING ROSES.

Look attentively at any rose branch, and you will find at the bottom of *every leaf* a small, scarcely perceptible swelling or protuberance, looking altogether as innocent of growth as a cup of cream. Remember, at the bottom of every leaf. Find another bough which has had its extremity injured or amputated. Do you not see with what eagerness this little "bud" has shot forward to conceal and repair the damage? This modest little "bud" is the epitome of a rose tree, and though nursed in the bosom of the lordliest rose that ever bore a title, if you will detach it gently and apply it to the freshly peeled surface of the thorniest, scraggiest old dog of a rose, it will soon repay you for your trouble by turning "bright leaves to the air, and a dedication of its beauty to the sun."

I think those buds grow best which have already taken a start on the parent stem. I have certainly put in La Marques of half an inch in length, which are now masses of buds and foliage.

Take a limb of the current year's growth, which has become firm; slice off the bud with a little of the wood; detach the bark with the bud on it by a little handling; cut off the leaf, but leave the stem to hold it by; place it between your lips while you prepare a place for it.

Select a similar limb on any other bush; if thorny, knock them off; draw a sharp penknife downwards *through the bark*, an inch or less; cross it with another cut, shorter, but always through the bark. Carefully raise the little corners thus made from the wood; hold firmly on each side, and you can raise with the knife without breaking or tearing. Now put your little bud under these corners, and press all together; confine firmly with soft cotton thread, which may remain until it produces an evident indentation. Cut off the branch a few inches above, and keep down the original buds as they show themselves.

This is the whole matter. The finest roses will grow without any subsequent care. Indeed, I have inserted many, and forgotten them until they forced themselves on my attention by their elegance and vigor.

Any bush will do to bud on. Some are merely preferable, as the "Pride of France," "Daily," and "Multiflora." I am very partial to the last, as it is common, affords a stock from cuttings in a few months, is vigorous, smooth, and easily backed. Well manured, one stock will support a great many varieties of the finest roses.

The rose bush requires an annual spading, and of course a *rich* soil. For heavy micaceous loams, nothing is better as a manure than rotten chips, spaded in and spread an inch or more in depth on the surface.

VERBENAS.

The different varieties of the verbena afford many shades of color, from the most brilliant to the most delicate, and no family of plants better pays the labor bestowed upon them. Some of them, too, possess a fine odor.

The proper mode of cultivation is as follows: Prepare a bed of convenient size by digging it thoroughly to a good depth. Lift the plants from their pots, and set them into this bed, a distance of one and a half or two feet from the edge of the bed, and about two feet from each other. They multiply by sending down roots from their joints. The species that are not creeping should have their twigs fastened to the earth by hooked or forked pegs. In the fall they must be placed in pots and protected from the frost.

TABLE OF MANURES, WITH THE QUANTITIES TO BE USED, AND MODE OF APPLICATION.

We take the following table from one of our English papers, and give it to our readers as we find it. It cannot be taken as an exact statement of the wants of land for the purposes named, but may be useful as a general guide. The quantities required will vary with the nature and condition of the land on which the manure is to be used.

Name of Manure.	Nature and Composition.	For Farm Crops.	For Garden Crops.	Weight per Bushel.
Guano,.....	The dung of sea birds, imported from Peru, &c., and containing various salts of ammonia and phosphates.	3 to 4 cwt. mixed with its own weight of ashes or mould, and drilled, or sown broadcast, for grass, turnips, mangold-wurzel, or other green crops.	3 lb. per square rod, equal to 30¼ square yards. This, and all soluble salts, are best applied in solution, containing not more than 5 ozs. in 2 galls. of water.	80 lbs.
Nitrate of Soda,	Nitric acid and soda, a natural product imported from Peru, &c.	1½ cwt. per acre, sown broadcast with half its own weight of ashes or mould, for wheat, oats, grasses, &c.	1 lb. per square rod, in solution, like guano.	80 lbs.
Nitrate of Potash, Saltpetre,	Nitric acid and potash, a natural product, imported from the East Indies.	1 cwt. per acre, sown broadcast, in the same manner as nitrate of soda, for wheat only.	1 lb. per square rod, in solution, like guano.	80 lbs.
Petre Salt,.....	Common salt and nitrate of potass, the residuum of a manufacture.	5 cwt. per acre, sown broadcast, as a purifier of grass land.	4 lbs. per square rod, in solution, like guano.	75 lbs.
Gypsum, Sulphate of Lime,	Sulphuric acid and lime, an abundant mineral in several parts of England.	2½ to 3 cwt. per acre, sown broadcast on clover, trefoil, sainfoin, and other grasses.	3 lbs. per square rod.	80 to 84 lbs.
Sulphate of Ammonia,.....	Sulphuric acid and ammonia, the residuum of a manufacture.	2 cwt. per acre, mixed with a little mould, and sown broadcast, for clover, oats, &c., and drilled for turnips.	1 lb. per square rod.	70 lbs.
Bone Dust and ½ Inch Bones,.	Phosphates of lime and magnesia, carbonate of lime and animal matter yielding ammonia.	1½ quarter to 20 bushels drilled, or sown broadcast, mixed with ashes, for turnips, vegetables, wheat, &c.	19 to 20 lbs. per square rod.	42 to 45 lbs.
Calcined Bones,	The same constituents as the above, with the exception of the animal matter.	For mixing with farm-yard dung, and other manures containing ammonia.		
Phosphate of Lime,.....	Phosphoric acid and lime.	This manure is easily blended with farm-yard litter, &c.	3 lbs. per square rod.	
Superphosphate of Lime,.....	Phosphoric acid and lime in a more soluble state than in bones, prepared by dissolving bones in sulphuric acid.	For mixing in composts, fixing the ammonia of dung-heaps and urine-tanks, and forming phosphate of ammonia.	For garden culture, ½ lb. to the square rod.	
Phosphate of Ammonia,.....	Phosphoric acid and ammonia.	For mixing in compost, and furnishes from its constituents much nutriment to vegetation.	1 lb. to the square rod.	
Muriate of Ammonia,.....	Muriatic acid and ammonia.	Applicable in the same manner as sulphate of ammonia.	1 lb. to the square rod.	65 to 70 lbs.
Muriate of Lime,.....	Muriatic acid and lime.	For mixing with compost-heaps.	2 lbs. per square rod.	65 to 70 lbs.
Sulphate of Magnesia,.....	Sulphuric acid and magnesia.	Mixed with night-soil for potatoes, 1 cwt. per acre, or to 8 loads of stable-dung.	¾ lb. per square rod.	
Soda Ash,.....	Lime, magnesia, alumina, charcoal, silica, and a few other ingredients in smaller proportions.	For destroying wire-worms and other predacious insects, 1 cwt. per acre. This quantity must not be exceeded.	.....	60 lbs.

WONDERFUL TREES.

Among the remarkable trees in the world, the following, of which we have compiled brief descriptions, are some of the most curious. We take it from the *Journal of Education:*

The Great Chestnut Tree.—On the one side of Mount Etna there is a famous chestnut tree, which is said to be one hundred and ninety-six feet above the surface of the ground. Its enormous trunk is separated into five divisions, which give it the appearance of several trees growing together. In a circular space formed by these large branches, a hut has been erected for the accommodation of those who collect the chestnuts.

The Dwarf Tree.—Captains King and Fitzroy state that they saw a tree on the mountains near Cape Horn, which was only one or two inches high, yet had branches spreading out five feet along the ground.

The Sack Tree.—There is said to be a tree in Bombay called the sack tree, because from it may be stripped very natural sacks, which resemble "felt" in appearance.

The Ivory-nut Tree.—The ivory-nut tree is properly called the Tagua plant, and is common in South America. The tree is one of the numerous family of palms, but belongs to the order designated as screw pine tribe. The natives use the leaves to cover their cottages, and from the nuts make buttons and various other articles. In an early state the nuts contain a sweet milky liquid, which afterwards assumes a solidity nearly equal to ivory, and will admit of a high polish. It is known as ivory-nut, or vegetable ivory, and has recently been brought into use for various purposes.

The Brazil-nut Tree.—The Brazil-nut tree may justly command the attention of the enthusiastic naturalist. This tree thrives well in the province of Brazil, and immense quantities of its delicious fruit are annually exported to foreign countries. It grows to the height of from fifty to eighty feet, and in appearance is one of the most majestic ornaments of the forest. The fruit, n its natural position, resembles a cocoa-nut, being extremely hard, and of about the size of a child's head. Each one of these shells contains from twelve to twenty of the three-cornered nuts, nicely packed together. And to obtain the nuts, as they appear in market, these shells have to be broken open. During the season of their falling, it is dangerous to enter the groves where they abound, as the force of their descent is sufficient to knock down the strongest man. The natives, however, provide themselves with wooden bucklers, which they hold over their heads while collecting the fruit from the ground. In this manner they are perfectly secure from injury.

The Cannon-Ball Tree.—Among the plants of Guinea, one of the most curious is the cannon-ball tree. It grows to the height of sixty feet, and its flowers are remarkable for beauty and fragrance, and contradictory qualities. Its blossoms are of a delicious crimson, appearing in large bunches, and exhaling a rich perfume. The fruit resembles enormous cannon balls, hence the name. However, some say it has been so called because of the noise which the ball makes in bursting. From the shell, domestic utensils are made, and the contents contain several kinds of acids, besides sugar and gum, and furnish the material for making an excellent drink in sickness. But, singular as it may appear, this pulp, when in a perfectly ripe state, is very filthy, and the odor from it is exceedingly unpleasant.

The Sorrowful Tree.—At Goa, near Bombay, there is a singular vegetable—the sorrowful tree, so called because it only flourishes in the night. At sunset no flowers are to be seen; and yet, half an hour after, it is quite full of them. They yield a sweet smell, but the sun no sooner begins to shine

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upon them, than some of them fall off, and others close up; and thus it continues flowering in the night all the year.

The Cow Tree.—This tree is a native of Venezuela, South America. It grows in rocky situations, high up the mountains. Baron Von Humboldt gives the following description of it:—On the barren flank of a rock grows a tree with dry and leathery leaves; its large woody roots can scarcely penetrate into the stony soil. For several months in the year, not a single shower moistens its foliage. Its branches appear dead and dried; yet, as soon as the trunk is pierced, there flows from it a sweet and nourishing milk. It is at sunrise that this vegetable fountain is most abundant. The natives are then to be seen hastening from all quarters, furnished with large bowls to receive the milk, which grows yellow and thickens at the surface. Some drain their bowls under the tree, while others carry home the juice to their children; and you might, as the father returned with this milk, fancy you saw the family of a shepherd gathering around and receiving from him the production of his kine. The milk, obtained by incisions made in the trunk, is tolerably thick, free from all acidity, and of an agreeable and balmy smell. It was offered to us in the shell of the calabash tree. We drank a considerable quantity of it in the evening before going to bed, and very early in the morning, without experiencing the slightest injurious effect.

The Bread-Fruit Tree.—This tree is found on the islands in the Pacific Ocean. The trunk rises to the height of thirty to forty feet, and attains the size of a man's body. The fruit grows to about the size of a child's head. When used for food, it is gathered before it is fully ripe, and baked among ashes, when it becomes a wholesome bread, and in taste somewhat resembles fresh wheaten bread. This is a very useful tree to the natives; for, besides its fruit, its trunk furnishes timber for their houses and canoes; the gum which exudes from it serves as pitch for their vessels, and from the fibres of the inner bark, a cloth is made to cover their persons.

The Upas Tree.—For some ages it was believed that a tree existed in the East Indies which shed a poisoning, blighting and deadly influence upon all animals that reposed under its branches; and that so fatal were its effects, that birds attempting to fly near it, fell to the ground and perished. For several years past, there being no reliable authority that such a tree really existed, it has generally been supposed among the intelligent to be fabulous, and hence termed the "fabled Upas tree." But, a few years since, a tree was discovered in a peculiar locality in the East Indies, which it is believed gave rise to the wonderful accounts of the Upas tree. In the location where this modern Upas tree was discovered, there is a constant and dense collection of carbonic acid gas; consequently, all animals that come near it, die by breathing the poisonous gas. The cause of such an abundance of gas being collected in the locality of these trees is unknown. A few months since, a tree was discovered on the Isthmus of Darien, which appears to have a similar influence on animal life. The Panama *Star* says:—"A man named James Linn, being tired, laid down under a tree to sleep, and on waking, found his limbs and body swollen, and death soon followed." Cattle avoid eating and ruminating under this tree.

The Tallow Tree.—This tree is found in China. It is called the tallow tree, because a substance is obtained from it resembling tallow, and which is used for the same purposes. It grows from twenty to forty feet in height.

Lace Bark Tree.—In the West Indies is found a tree, the inner bark of which resembles lace, or net-work. This bark is very beautiful, consisting of layers which may be pulled out into a fine white web, three or four feet wide. It is sometimes used for ladies' dresses.

BASKET WILLOW.

Much has been written in our agricultural journals on the cultivation of the willow for the market, and much light has been thrown upon the subject where before but little was understood. It is no doubt a profitable crop in almost any section of the country. In some districts, convenient to a good market, perhaps no crop pays better for the labor bestowed upon it than this. It requires no attention after the first year, and will last twenty years without renewal.

Several species are cultivated for baskets, hoops, &c., and practical men are not agreed always in respect to the qualities of the different kinds. We are inclined to believe that soil and climate may have an influence in modifying the qualities of the tree.

The species most generally approved as the best, is the *Salix viminalis.* There are two varieties of this, the *narrow-leafed* and the *broad-leafed*, (*sangustifolia* and *latifolia*,) which in Europe are extensively used for these purposes.

But a Southern writer, of considerable experience, says, that these varieties are "coarse," and mostly used for hoops. He has grown the *Salix vitellina*, and commends it as the best basket-willow. The twigs are not so long and slender as those of the species before named, but this is the only point in which they are inferior. The *viminalis* is of quick growth, and the shoots are long and very strong. An acre of the growth will produce annually 1½ tons of material for the market.

The *S. Fabenira* is cultivated in England for fine baskets, and also the *S. Rubra.* Mr. Chisholm, of Beaufort, S. C., (before referred to,) recommends the *Golden Willow*, (*S. vitellina*,) after several years' experience, as well suited to the South, and giving more tough twigs than either of the other varieties.

Michigan, it is said, abounds with the osier willow, which is already extensively used for these manufactures. In the winter the branches are cut off, and new shoots appear in the spring, which are gathered at the proper season.

When the willow is planted for cultivation, the twigs should be set out late in the fall, or in the early spring. Ten thousand to fourteen thousand are required per acre. They should be set about three feet apart, and be eighteen inches long. The land should previously be well ploughed. The cuttings should be growths of three or four years old.

The soil may be mire or clay, but should be wet by a running stream. The plants do not succeed so well in stagnant water.

If the twigs are intended for home use, they may be dried a few days, and stowed away in bundles. If intended for market, they should be scalded with boiling water or steam, after which the bark may be stripped off, and the twigs dried and preserved as before. Before working them into baskets, they should be soaked about two hours.

An ingenious implement is used in the West for stripping the bark from the twig. It consists of a round stick of hard wood, about an inch in diameter, quartered about half its length, and having the two *diagonal* quarters removed. This leaves a sharp edge on two opposite sides. The stick is held in the right hand, and the twig inserted with the left, when the two quarters are pressed together by the thumb and finger, and the twig is drawn through. Some modification of this tool is in general use.

EXTENT OF COTTON LANDS.

A LETTER from Mr. E. Emmons, civil engineer or surveyor, we believe, to His Excellency, Governor Reid, appears in one of our Southern exchanges, in which he uses the following encouraging language:

"I am often surprised at the amount of excellent land which I meet with every day. The cotton lands are not confined to Edgecombe, Wayne, or exclusively to the eastern part of the State; the valleys of the Yadkin and Catawba are equally good for cotton, equally fertile and productive in all the great staples of this latitude. From the Jersey Settlement to Salisbury, from Salisbury to Charlotte, and then south to the State line, excellent and productive lands are never out of sight for any length of time. With attention and cultivation but little beyond the ordinary routine, large tracts may be made to produce continuously 2,000 lbs. of seed cotton to the acre. This is the product of the plantation of Mr. D. B. Peebles, of Providence District, in Mecklenburg county. The expense of cultivation to produce this result is by no means great; in this yield of seed cotton there is 600 lbs. of lint. This result appears still more remarkable when it is known that there are no natural fertilizers; no marks of lime; and also that these lands belong to the oldest cultivated lands of the State. Indeed, one is almost inclined to fall into the common opinion that they will never wear out. This idea, however, is delusive. When we find such results may be obtained with ordinary skill in cultivation, or with ordinary tillage, we are led to surmise what might not be effected by additional attention and skill, combined with a free use of such fertilizers as the successive crops require. These lands are distinguished from others by their dark brown color—they are called mulatto lands. I have spoken of their adaptation to cotton. Now, it would not be right to regard them as adapted only to this crop, for if there are soils which are universal in their adaptation, these dark red soils of Cabarrus, Mecklenburg, and Rowan are of this description. It is true that there are degrees of excellency with those which bear the color I have spoken of. The Providence soils are looser than those of some other tracts, for the latter are stiffer and more liable to bake under the sun than the former. It is not, however, to be concealed that these red soils are impatient under droughts. The crops are liable to fail when the rains fail: in this respect they rank below the sandy soils of the Union. The latter are based upon and derived from the slates, while the former are based upon and derived from certain varieties of granite. This granite contains a large amount of iron in the shape of a protoxide, which on exposure to the air becomes a peroxide, which has the red color of the soil. The iron, however, may be in combination with sulphur, which in decomposing passes into a state of peroxidation. This latter condition of the iron appears from the color of the soil where the roots of the oak are found, and especially when they are wounded. In this case, the gallic acid exuding from the wounded roots finds in the soil sulphate of iron. Ink will, therefore, be formed by this combination, and the purple or black streaks which often appear in the railroad cuts are due to the formation of ink. Ink soils require for correction lime, inasmuch as any considerable quantity of this astringent salt of iron is poisonous to vegetation; yet this salt (sulphate of iron) is useful in small quantities in the soil. It seems to act upon vegetables as it acts upon animals, viz.: as a tonic. These astringent soils are very common throughout the State. They are in this condition from the great abundance of the proto-sulphuret of iron which is disseminated through the rocks from which the soils are derived.

Wake county is remarkable for astringent soils. In the dry parts of the season the efflorescence of this salt is a common occurrence; and any one may satisfy himself of the fact by tasting the soil. I have already said that the corrective for such soils is lime. This substance, however, is not only a corrective, but it becomes, under these circumstances, an active fertilizer. Gypsum is the product formed by this application. In this connection I may be allowed to say that the most important results of the internal improvement system will reach the planter. It must give him the fertilizers—it will also open the door to the market which has, up to the present hour, been closed upon him. The time is not far distant when North Carolina will become one of the great producing States, and the taunt which has often been thrown into her teeth, 'Alas for poor North Carolina! she has nothing to sell,' will pass away. It is a remarkable fact that the mining lands of this State are usually as productive and valuable for plantations as the lands of oth States. She has, therefore, a double source of wealth, extending over large tracts of country. In other countries mining lands are mostly poor and unproductive under the best systems of tillage. I have collected many samples of the soils peculiar to this part of the State, and I believe that the agriculture is equally interesting with that of the eastern part of the commonwealth.

TREATMENT OF SANDY SOILS.

The term "sandy soils" may mean very different things. It includes a great variety of states and conditions. It may describe a dry sand or a clayey sand. Some "sands" are little else than silex, and the clays which others contain may also be of various character. Hence the term conveys no very precise idea. They all agree, however, in one thing: they contain an excess of siliceous matter. If the silex is nearly pure, like that on a large extent of our northern sea-shore, it may be thrown into water without producing much effect upon it, for it speedily settles at the bottom, leaving the water as clear as before. If the water is left muddy, it may be poured off into another vessel, leaving the silex at the bottom, and allowed to settle gradually. The nature of the deposit can then be examined, and may be found to be clay, lime, vegetable mould, etc. The character of this sediment and the proportion it bears to the silex or pure sand may also be estimated with some accuracy. Portions of the soluble matter, however, may be dissolved in the water, and only general results, therefore, can be reached by any such process. The evaporation of the water is one step onward towards accuracy, and may sometimes be desirable. The addition of an acid to the solution may also determine with certainty as to the presence of lime and other alkaline bases, by the presence or absence of effervescence when the acid is poured into it.

Some sandy soils produce good wheat. For this, there should be from fifty to eighty per cent. of clay, ten or twenty per cent. of lime, and a similar proportion of *humus*, or vegetable mould.

Some sandy soils contain over ninety per cent. of silex. These, of course, must be extremely barren. But although sixty or seventy per cent. may be silex, if clay is present in considerable quantities, with some lime and vegetable matter, decent crops may be obtained.

This view points out the mode of determining what is required by a "sandy soil." It will, however, be perfectly safe to apply bone manures, and other forms of lime mixtures, in connection with barn-yard manure. Bones supply not only lime, but phosphorus, which is often wanting in soils from which wheat and other grains have been gathered.

The best manure for sandy soils is found in the compost-heap. Peat, turf, weeds, etc., mingled with ashes or bones treated previously with acid, and with barn-yard manure, will be found very effective. If clay can be had conveniently, this too should be added. Ten loads of stable-manure, five to ten loads of clay, thirty bushels of ashes, and ten bushels of lime may be mixed together. It should be allowed to remain a few weeks before it is applied to the land. These proportions may be varied according to the condition of the soil. It is also of great service to sandy land to haul clay upon it in the fall. After it is spread over the surface, the frosts of winter will prepare it for the plough in the spring. This stratum and proper cultivation will secure a thorough mingling among these elements, after which the addition of the manures described (omitting the clay, perhaps) will insure an ample return for the labor and cost bestowed upon it.

But, better than this, most sandy soils have a clay subsoil. This may be ploughed up, and by proper cultivation mixed with the sand without the cost of transportation.

MULES.

The following statement of the history of mules in this country is from an exchange—we know not what; but we commend the subject to our Northern farmers. Our opinion of mules has been changed of late, and we believe that the substitution of mules for oxen or horses, in the ordinary work of a farm, would result in a great saving of expense. They endure great labor, and are kept at much less cost than horses.

"Few of the farmers of this country are aware what a debt of gratitude they owe George Washington for the introduction of mules into general use for farm purposes.

"Previous to 1783 there were but very few, and those of such an inferior order as to prejudice farmers against them, as unfit to compete with horses in work upon the road or farm. Consequently there were no good jacks, and no disposition to increase the stock; but Washington became convinced that the introduction of mules generally among Southern planters would prove to them a great blessing, as they are less liable to disease, and longer-lived, and work upon shorter feed, and are much less liable to be injured by careless servants than horses.

"As soon as it became known abroad that the illustrious Washington desired to stock his Mount Vernon estate with mules, the King of Spain sent him a jack and two jennies from the royal stables, and Lafayette sent another jack and jennies from the island of Malta.

"The first was of a gray color, sixteen hands high, heavily made, and of a sluggish nature. He was named the Royal Gift. The other was called the Knight of Malta; he was about as high, but lighter made, black color, and lithe and fiery, even to ferocity.

"The two different sets of animals gave him the most favorable opportunity of making improvements by cross-breeding, the result of which was a favorite jack which he called Compound, because he partook of the best points in both of the original jacks. The General bred his blooded mares to these jacks, even taking those from his family coach for that purpose, and produced such superb mules that the country was all agog to breed some of the same sort, and they soon became quite common. This was the origin of mules in the United States, now about sixty-five years since the first start, and no

doubt there are now some of the third and fourth generations of Knight of Malta and Royal Gift to be found in Virginia, and the great benefits arising from their introduction to the country are to be seen upon almost every cultivated acre in the Southern States. Notwithstanding the enormous increase of late years, arising from a systematic course of breeding in the Northern States for the Southern market, mules were never more valuable than at present, or more ready of sale at high prices."

WASHING BY STEAM.

MANY of the mechanical inventions and improvements of the present day are of practical utility in the every-day business of life; so that the labor of individuals or of families is materially diminished. One of this character is that denoted by our title.

The following account is a description of the wash-room of the St. Nicholas Hotel of this city, from a personal examination by the editor of the *Tribune:*

"A strong wooden cylinder, four feet diameter, and four and a half feet long, is mounted on a frame, so as to be driven by a band on one end of the shaft. This shaft is hollow, with pipes so connected with it that hot or cold water, or steam, can be introduced at the option of the person in charge. The cylinder being half full of water, a door at one end is opened, and 300 to 500 pieces of clothing are thrown in, with a suitable quantity of soap, and an alkaline fluid which assists in dissolving the dirt and bleaching the fabric, so that clothes after being washed in this manner increase in whiteness without having the texture injured.

"When the cylinder is charged, it is put in motion by a small steam engine, and made to revolve slowly, first one way a few revolutions and then the other, by which the clothes are thrown from side to side, in and out and through the water. During this operation the steam is let through a double-mouthed pipe, which has one mouth in and one mouth out of water; the steam entering the water through the immersed end and escaping through the other, by which means it is made to pass through the clothes, completely cleansing them in fifteen or twenty minutes. The steam is now cut off, and the hot water drawn through the waste pipe, and then cold water introduced, which rinses the articles in a few more turns of the cylinder. They are now suffered to drain until the operator is ready to take them out, when they are put into the drying machine, which runs like a millstone; and its operation may be understood by supposing that millstone to be a shallow tub, with wire net-work sides, against which the clothes being placed, it is put in rapid motion: the air passing in a strong current into the top and bottom of the tub and out of the sides, carries all the moisture with it into the outside case, from whence it runs away. The length of time requisite to dry the clothes depends upon the rapidity of the revolving tub. If it should run 3000 revolutions a minute, five to seven minutes would be quite sufficient. When there is not sufficient steam to run the dryer with that speed, it requires double that. In washing and drying there is nothing to injure the fabric. Ladies' caps and laces are put up in netting bags, and are not rubbed by hand or machine to chafe or tear them in the least, but are cleansed most perfectly.

"It can readily be imagined what a long line of wash-tubs would be required to wash 5,000 pieces a day, and what a big clothes-yard to dry

them in; while here the work is done by four persons, who only occupy part of a basement-room, the other part being occupied by the mangle, and ironing and folding-tables. Adjoining are the airing-frames, which are hung with clothes, and then shoved into a room steam-pipe heated, when they are completely dried in a few minutes.

"*Small Family Machines.*—Almost the first thought, after witnessing the operation of this machine, was, can washing be done upon the same principle in small families? To our inquiries upon this point, we have received the following satisfactory information:

"For common family use, hand-machines are made to cost from $40 to $50, with which a woman can wash 50 pieces at a time, and complete 500 in a day without laboring severely. For the purpose of washing, without driving the machinery by steam, a very small boiler will be sufficient. It is not necessary to have a head of water, as that can be found in the cylinder, which can be turned by horse or any other convenient power. The plan of cleansing clothes by steam is not a new one, but it is contended by the inventor that his process is an improvement upon all heretofore applied to that purpose."

The washing of this hotel varies in amount from 3,000 to 5,000 pieces a day. It is all done by one man and three women, with less work for each than two dozen pieces in the ordinary mode of hand-rubbing, or by washing-boards.

RAILROAD OPERATIONS.

Cleveland and St. Louis Railroad.—An air-line railroad, under the name of the "Cleveland and St. Louis Railroad," according to *The Toledo Blade*, is in contemplation. The road, according to the programme, is to run direct to Paris in Indiana, where it will unite with the Terre Haute and Alton Railroad. A Company under the General Railroad Law is already formed in Indiana, and stock taken, sufficient in amount to secure the construction of the Indiana portion of the work. This road will cross the State of Ohio almost midway between the Bellefontaine and Indianapolis Road on the south, and the Toledo, Wabash, and St. Louis Road on the north, and will intersect with the Dayton and Michigan Road at Lima, making the distance between Toledo and St. Louis by this route 390 miles. At Tiffin it will intersect with the Mad River and Lake Erie Road, thus furnishing a connection between Sandusky and St. Louis over a route of 418 miles, and the length from Cleveland to St. Louis will be 460 miles. It will also intersect with the Toledo and Norwalk Road, and the Sandusky and Mansfield Road.

Pittsburgh and Connelsville Railroad.—This extends from the city of Pittsburgh to Cumberland, Md., 150 miles, where it intersects the Baltimore and Ohio Railroad, forming a direct line from Pittsburgh to Baltimore. The estimated cost of the road is about four millions of dollars. Its grades are quite favorable, the maximum through the mountains being less than 70 feet. The low cost of this line, and the very large amount of freight and other traffic which now passes to Baltimore from Pittsburgh over the Pennsylvania Railroad, will, it is believed, make it a very profitable work. Gen. Wm. Larimer, Jun., of Pittsburgh, is the President of this Company, in whose energetic hands it is likely to progress with great rapidity, he being one of the most popular, able, and public-spirited men in that com-

munity. The means of the Company already secured are large, amounting to considerably over two and a quarter millions of dollars, including the guaranty of one million from the city of Baltimore, recently secured.

The consolidation of the different railroads composing the Central Line from Albany west was recently confirmed by the unanimous vote of the shareholders of the different Companies.

CONSOLIDATION.—The basis of the arrangement between the Toledo, Norwalk and Cleveland, and the Junction Roads, is understood to be that the latter is put into the consolidation at cost, while to the stockholders of the former a new issue of stock is made of $300,000, distributed as a bonus before the connection is made. This is equal to about 45 per cent. on the old stock. The Toledo, Norwalk and Cleveland then stands $950,000 stock, $900,000 unconvertible bonds. This is to receive the earnings up to 1st September, equal to a dividend of 10 per cent.

SAVANNAH.—The railroads which transport cotton to Savannah are 13 in number, and in length, 1,053 miles. Eight of these roads are completed and in operation, and the remainder are in the process of construction.

LEWISTON AND TOPSHAM RAILROAD. — We learn that the surveys on this road will be completed very speedily. The prospect for an eardy commencement on the work of grading is flattering. The people of Bath are in earnest, and will doubtless do all in their power to have the road built. The people living on the proposed line certainly have as much at stake as Bath, and we see no reason why the work should not commence as soon as the necessary arrangements can be made.

WISCONSIN has given charters for fifteen thousand miles of railroad, that will require $300,000,000 to construct.

JEFFERSONVILLE RAILROAD.—The Directors have taken steps for the immediate construction of the road between Edenburg and Indianapolis, a distance of 30 miles.

SOUTHERN INDIANA.—As regards railroad facilities, and the consequent proximity to markets, Southern Indiana will be unsurpassed, as soon as the various lines projected and in course of construction are completed. No less than four lines of railroad, commencing at points on the Ohio river, and running into the interior, are already in operation, while two or three others are contemplated. Here we have the Madison and Indianapolis Road, connecting those two points, and passing nearly through the county north and south. But the Ohio and Mississippi (six-foot guage) Road, connecting the cities of Cincinnati and St. Louis, (and which passes through the country from east to west, crossing the other near the centre,) is destined to be the great commercial channel through which the resources of Southern Indiana and Illinois are to be opened up. This will be the longest continuous railroad in the West, and, with two or three exceptions, in the world; and it must eventually become an important link in the iron chain which, we trust, is soon to unite the Atlantic sea-board with the golden regions of the Pacific.

VINCENNES AND EVANSVILLE RAILROAD.—The grading of this railroad between the former place and White river has been completed for some months, and is ready for the iron, which is being laid down as fast as possible.

We are able now to add, that the railroad from Burlington to Peoria is in

a state of forwardness, and its eastward extension from Peoria to the Indiana State line (in the direction of Logansport) has just been contracted for by New-York and Boston Companies—the whole to be completed by December 31, 1854. At a late meeting at Knoxville, Ill., subscriptions were announced by Tazewell and Iroquois counties, and the city of Peoria, of $250,000, and $300,000 by the contractors—5 per cent. being paid in. By January, 1855, the Air Line will be in operation to the Mississippi, at Burlington; and from thence some considerable portion of the distance towards the Missouri, at the mouth of the Platte! But this will not be the first railroad connection of the south of Iowa with the commercial metropolis. At Galesburg, Ill., the road to Peoria strikes the Central Military Tract Railroad, the speedy completion of which through the best agricultural section of Illinois to Chicago, is urged forward by the means and energy of the Michigan Central Railroad Company. From Burlington to Galesburg, the grading is done, except four miles opposite Burlington, and the track dressed off, ready for the ties and rails. Two hundred tons of iron and eight freight-cars arrived at Burlington a few days since, and twelve hundred tons, and two locomotives, (built at Taunton, Mass.,) are expected in a few days. An arrangement was made at Knoxville, by which freight and passengers from Chicago, *viâ* the Military Tract Railroad, will be passed from Galesburg to Burlington, at the same rates as from Peoria.

Effect of Railroads.—A citizen of this county sold recently a body of piney woodland at the rate of ten dollars per acre. The land lies near or on the line of the New-Orleans and Jackson Railroad, and previous to the contemplation of that project, was valued at very little, if any, more than Government price. This is one of the many beneficial effects produced by the construction of railroads.—*Gallatin* (*Copiah co., Miss.*) *Argus, 3d inst.*

In the above little paragraph as strong and, at the same time, as *practical* an argument in favor of railroads can be found as could be drawn from a volume of elaborate discussions on the subject.

Railroad Tunnels.—There are some pretty extensive holes in the ground on the line of the Covington and Lexington (Ky.) Railroad. Grant's tunnel, 10 miles from Covington, is just finished. It is 2,167 feet long, and about 300 feet below the surface of the earth. Anderson's tunnel, on the same road, is 763 feet long, and 100 feet below the surface.

Middletown Railroad.—The work on that section of the railroad between Middletown and New-Haven is progressing with considerable rapidity.

Remarkable Railroad Management.—Late statistics of the Albany and Schenectady Railroad show that during the last eleven years, 2,882,457 passengers have passed over the road, and not one, while in the cars, has been injured, and only two slightly injured while standing on the platform. Ezra Foster, Esq., has had the immediate superintendence of the road during this time.

PORK AS FOOD.

In giving our views of the proper mode of fattening calves and other animals, on page 111, we have introduced some suggestions in reference to pork, and other excessively fat meats. Since that paper was given to the printer, we have received a copy of *The Boston Medical and Surgical Journal*, which contains a striking confirmation of our views, chiefly experimental, and worthy of more consideration than many people, perhaps, will be

inclined to give it. We only add here, that the mere fact that any article has been used as food for many years and even to old age, comes far short of demonstration on this point, so long as so many diseaes abound in persons of all ages and both sexes.

"For many years past, [says that journal,] the Shakers of Massachusetts and perhaps those of other States, have wholly abandoned swine-raising, although an acknowledged source of profit to farmers like themselves. Some very wise men may be found among those excellent agricultural broad-brims, who on many subjects, supposed to require the exercise of very elevated intellectual endowments, exhibit powers and acquirements which would command respect in any society. They make no display of their knowledge beyond turning it to a practical account on their own industrial territories. In medicine there are individuals among them who are vigilant students, and prescribe, when occasion requires, with a clear understanding of the symptoms and the value of the medicines they may give. Their village health is proverbial. They seem scarcely liable to the prevailing maladies in their vicinity. . . . *Pork is not eaten by them*, because they find satisfactory evidence that the flesh of domesticated swine is more or less diseased."

"Again, a prominent Shaker recently stated to the editor of that journal 'that the children in his community never had measles, and stranger still, they could not take the disorder.' A few weeks since, an experiment was instituted which confirmed the truth of this alleged immunity. In order that the disease might be contracted by their children while young, upon the supposition that they were destined, of course, to undergo that specific suffering, as others did, they were sent to see some children 'among the world's folks' who were then sick with measles. But the little Shakers did not imbibe the sickness, having remained perfectly well ever since. The reason given by the Shakers themselves, why their children did not contract *rubeola* in this case, and why they are not liable to its invasion, is, *that they have never eaten pork.* Whether this be the only cause, or whether it be the effect of the general hygienic regulations of their community, we will not undertake to decide, but leave the subject for the consideration of others."

IMPROVED DUMPING WAGON.

The accompanying engravings represent an improved Dumping Wagon, patented August 3, 1852, by Mr. Thomas Castor, of Frankford, Philadelphia county, Pennsylvania.

This valuable improvement possesses many advantages over all other wagons of the kind hitherto invented. It is becoming a great favorite among farmers and teamsters, and will eventually, in a great measure, take the place of carts and the ordinary farm wagon. It combines all the properties of a Burden wagon, with the facility of dumping its load with much more ease than the ordinary cart. It is simple in its construction, and therefore not so liable to get out of repair. The facilities of dumping its load are not at all affected by an increase of weight. Mr. William W. Smedley, of Whitehall, Pennsylvania, who has been using it for some months, says, that his team can haul (and teamster dump) with as much ease 6,500 lbs. on the wagon, as 5,000 lbs. on an ordinary cart. And Mr. Minor Rogers, of Aramingo, Pa., after having given it a fair trial in hauling lumber, coal, wood, stone, lime,

and various other heavy materials, recommends it to the public as having exceeded his expectations in many respects: particularly in the ease with which heavy loads can be discharged. And all who have yet tried it, recommend it for usefulness and economy. The principle can be applied to burden-cars for railroads, heavy ox-carts, or to burden-wagons for any purpose, at a small additional cost. Farmers and others are requested to examine its construction and try it for themselves.

Figure 1 represents a perspective view, and figure 2 a side elevation of the wagon.

Fig. 1.

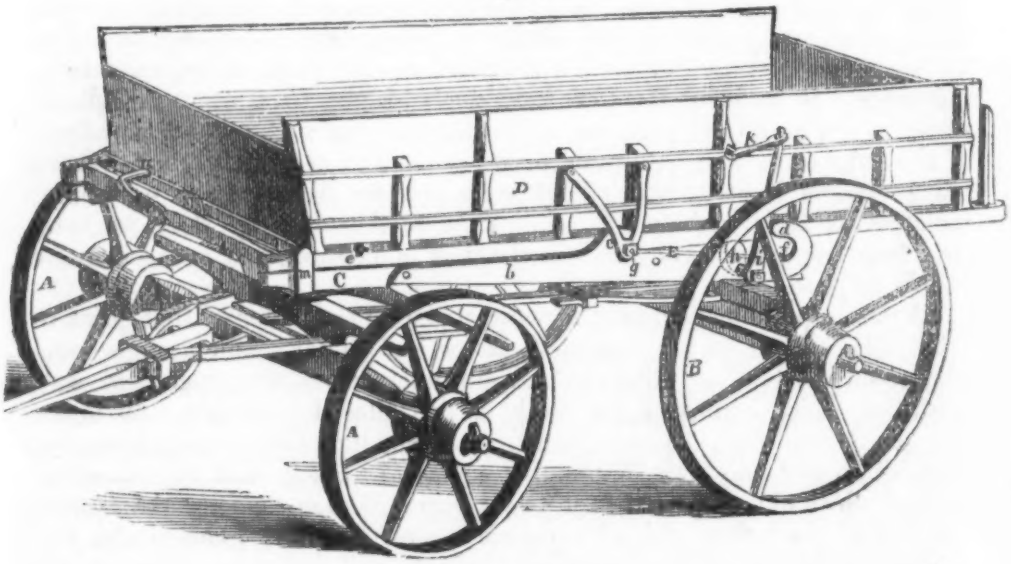
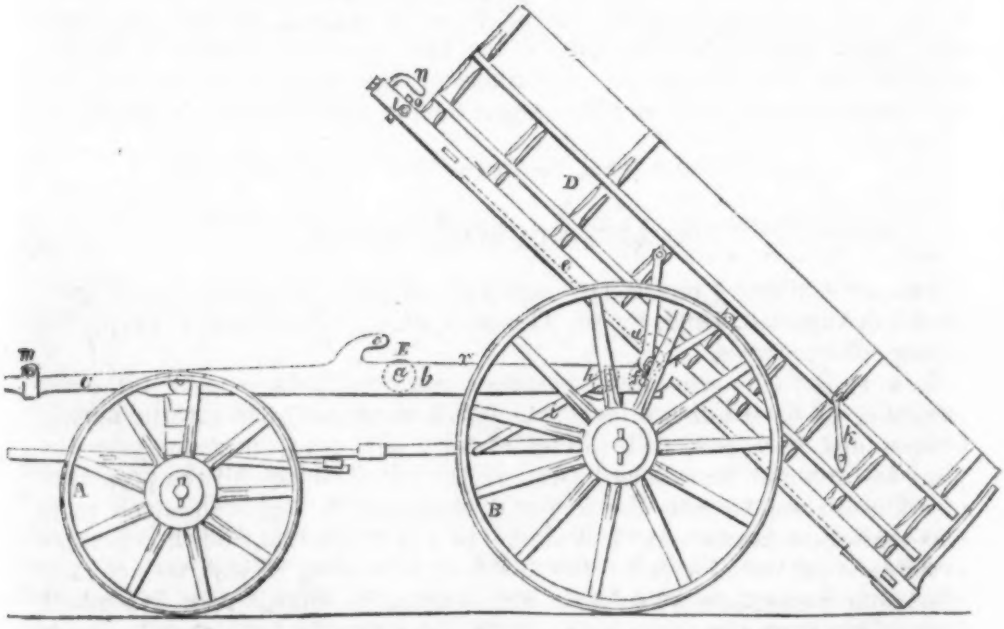


Fig. 2.



AA are the front wheels, and BB the hind ones, CC being the side timbers of the frame; D is the body, which is balanced on anti-friction rollers, E,

which turn on a rod extending across the frame, C; the said rollers form a fulcrum and bearing for the wagon body to rest upon and slide over, as heretofore shown, and they are so situated in relation to the length of the wagon, that the body is balanced upon them in the manner of a scale-beam, so that a small weight upon either end will tip or tilt the other end of the body. An outside plate, *b*, is bolted to either side of the frame or pieces, C, and is formed with hooks and stops, *c d*. The side timbers, *e*, are faced with metal, forming runners or rails for balancing the wagon body upon, and on which it moves over the rollers. An anti-friction roller, *f*, is hung in the back extremity of both the side-pieces, C, projecting slightly above their top surface. Upon either side of the body, D, is a braced stop-pin, *g*, which projects from the side timber, *e*, and when the body, D, is brought home for loading, as in fig. 1, serves to determine its proper position by striking and bearing against the hooks, *c*. These pins also form trunnions for the body to turn upon, in dumping the wagon, by catching within the lower hooks, *a*. A cam, *h*, is fitted to work through either side piece, C; these cams are mounted on a shaft extending across the frame, which shaft is operated by the lever, *i*, so that on turning the lever upward, as in fig. 1, and securing it by a strap or catch, H, the cams, *h*, slightly lift the back end of the wagon body, and support it; but when the lever, *i*, is turned down, as in fig. 2, the cams permit the wagon body to descend and run backward; *l l* are lock-rods attached to disks or double cranks, *o*, which are turned by the lever, *n*, and work longitudinally to lock and unlock the body by sliding through *c*, within catches or openings formed on the standards, *m*, as represented. When it is desired to unload the wagon, the lever, *n*, is turned, unlocking the body of the carriage, and the lever, *i*, brought down so as to permit the body to fall upon the rollers, when a slight pressure by the hand will carry the body backwards, and prepare it for unloading, which is easily done by the hand. When unloaded, depress the body at *n*, and bring it to its place; then raise the lever, *i*, and lock the standard, *m*, and it is again ready for reloading.

Further information may be obtained by letters addressed to the patentee, Frankford, Philadelphia Co., Pa.

THE PROPER TREATMENT OF CERTAIN ANIMALS.

All animals require treatment corresponding to their habits. This is so evident that it sounds like a truism, and yet some need advice of this kind. No man would think of feeding carnivorous species on vegetables, nor cows and horses on animal food. But perhaps the management of some people is as essentially unwise, if not so obviously absurd. We do not refer to those few and despicable persons, like one whom we have seen, who actually fed his skeleton of a horse on rum, but to those who seem to do well while they are violating the primary laws of life.

Milk from still-slops is universally condemned, and the milk produced from such feed is pronounced unwholesome, and even poisonous. That it is unhealthy, is obvious from the fact that cows thus fed rapidly become diseased, losing their teeth, becoming thin in flesh, &c., while a very few years of such keeping destroy their lives. But we know many families that give their cows the same thing, under the name of kitchen-slops or swill. If hogs are kept, they usually monopolize these choice condiments, while the cow is required to practise *total abstinence*. Whether or not much harm is done by such *diet*, we will not affirm, but we do know that sour swill is very

like the slops of the still. That is, it contains the same objectionable elements, and very little that can be called nutritive food. Whether such "moderate drinking" ought to be utterly abandoned, perhaps it is not necessary to inquire at present; but we do say that it is a partial adoption of the still-slop system.

Again, we have recently seen in the *Genesee Farmer* the following remarkable advice:

"In fatting calves for the butcher, they should be suckled regularly, have as much milk as they can take, after they are ten days old; they should be *tied up* in a dark, clean stable, and have a little fresh, clean straw given them every day. Much depends on their being kept clean and quiet.

"For rearing calves, of course, a different treatment is necessary. You must have an eye to *health and the development of muscle*, and not, as in the other case, to the accumulation of fat. They should be allowed more light and exercise."

We must be allowed to say that we prefer the meat of healthy animals to that of fat ones which are diseased; and though the learned doctor would not admit that he has other preferences, he has certainly given different advice: "If you are intending to kill, keep dark and quiet; but if to rear, you must regard the health of the animal, and give more light." Trees and all plants are found to illustrate the same principle. Cover your grass from the light, and it grows rapidly, and even *monstrously*, but it is weak and without color. Every farmer knows, or may know, that such food is almost worthless for his stock. But it is probably *very tender*.

All excess of fat is abnormal, whether in men or animals. An excessively fat man is never found to be a very vigorous man. He cannot endure severe labor, even of the more sedentary kind. He is not in a healthy condition. Neither is the excessively fat animal. No wild animal accumulates an excessive amount of fat, save those which are torpid in winter, and those only in the fall. Ere the spring arrives, the excess of fat disappears.

"But is not fat pork wholesome?" We answer by referring the inquirer to the *facts* already noticed, and call upon him, in our turn, for his answer. That many eat it and thrive, is very certain. Whether they are made *strong* by fat is another matter. How much weight of muscle can be organized from 1000 lbs. of pure fat? We answer, *not a fraction of an ounce.* There is no nitrogen in it, and not a single fibre of muscle can be made without that element. You might as well make atmospheric air without oxygen.

An excess of food destitute of nitrogen—that is, of fat-producing food—does not promote the health of biped or quadruped; and such culinary preparations ought to be indulged in with moderation, both at the table and the crib. We should prefer also healthy meats, the flesh of healthy animals. The laws of Moses were not merely arbitrary commands, and, apart from these considerations, why were these kinds of food prohibited by his code?

Thousands of children are killed every year by the use of still-slop milk, as the statistics of some of our cities abundantly show. How many of various ages are injured by the use of animal food, "tender," no doubt, but fed in the "dark," and "tied," so as to forbid all exercise, during its whole life, we do not know.

Our counsel is, Give calves moderate exercise, clean and pleasant quarters, and liberal feed, and our veal will not only be tender, but healthful.

Do not kill calves too young. The flesh of a calf is not in a good condition before it is at least a month old. It is soft, slimy, and unsubstantial, or else equally objectionable in other respects. We would as soon eat the

substance of a premature birth, as of an animal soon after it first sees the light.

Calves that are to be reared may be allowed more severe exercise. No matter if their muscles are made tough and hard. They will be the stronger for it. Let them run through the pastures and take as much exercise as they please.

We know not why the same principles should not be applied to all animals that are under our care, whether intended for the table or for other use. Were they universally applied, we believe that animal food would less frequently be found hurtful, and that the various kinds of food, in suitable quantities, would be found alike healthful for all ages.

All animals, especially those designed for the table, should be kept clean. Cleanliness will be a defense against divers afflictions to which animals are liable, and which tend to produce disease. Even a hog is not an exception. They seek the mud, perhaps, because they are diseased. They are so kept that they are feverish in their habit, and need the cooling effect of the gutter. Daily ablution might put an end alike to the desire and to the cause of it.

PRESERVING BUTTER.

The farmers of Aberdeen, Scotland, are said to practise the following method for curing their butter, which gives it a great superiority over that of their neighbors:

"Take two quarts of the best common salt, one ounce of sugar, and one ounce of common saltpetre; take one ounce of this composition for one pound of butter, work it well into the mass, and close it up for use. The butter cured with this mixture appears of a rich and marrowy consistency and fine color, and never acquires a brittle hardness, nor tastes salty. Dr. Anderson says: 'I have eaten butter cured with the above composition that has been kept for three years, and it was as sweet as at first.'"

It must be noted, however, that butter thus cured requires to stand three weeks or a month before it is used. If it is sooner opened, the salts are not sufficiently blended with it, and sometimes the coolness of the nitre will be perceived, which totally disappears afterwards. The above is worthy the attention of every dairywoman.

MANUFACTURE OF PAPER.

It is well known that paper which is very white when first made, often becomes yellow some time after being used. The yellow color is not always uniform, but often comes out in spots more or less large, of a circular outline and a rusty tint. In some Paris manufactories, this defect (which is incorrectly attributed to an alteration of the fibre) is remedied in a simple manner; and as the process of decoloration may not be commonly used in America, judging from some paper I have seen, I make a brief mention of the subject.

The researches were made here by a manufacturer who combines in a high degree science and technology. M. Gélis recognized at first that the change of color was not due to any alteration in the ligneous fibre, and was owing

to iron. But what the source of the iron? and how is it introduced? An examination of the manufacture, through its process, shows that there is less iron in the pulp than in the paper made from it. The origin of the iron is hence not in the preparation of the pulp, but it must be attributed to the drying-cylinders of steel under which it is passed while yet moist. The chlorine contained in the paste, and which it is very difficult wholly to remove by the washing process, becomes suddenly vaporized under the heated cylinders, attacks these cylinders, and forms the protochloride, (Fe Cl,) which thence impregnates the paper. Colorless itself, this chloride gradually absorbs oxygen on exposure to the air, and thus the coloration takes place.

It is therefore not a remedy against iron but against chlorine that is required. The hyposulphite of soda is the simple antidote, and a very small quantity suffices to eliminate a large quantity of chlorine, since one equivalent of hyposulphurous acid requires four equivalents of oxygen, and therefore four equivalents of chlorine, to transform it into sulphuric acid.

For testing the complete removal of the chlorine, M. Gélis uses a liquor made of iodide of potassium and amidon, (starch.) This liquor becomes instantly blue if there is the least trace of chlorine.

The above is from Silliman's *Journal of Science and Art*, a work unequalled in this country, and unsurpassed in real merit in any country, in the higher departments of science.

COATING IRON WITH COPPER.

A PATENT has been granted to Theodore G. Bucklin, of Troy, N. Y., for a new and improved mode of coating iron with copper, which promises to be an invention of no small importance to the arts. It has long been a desideratum to coat iron with some other and less oxidizable metal, in order to render it more durable in exposed situations. It is more essential to have sheet and plate iron than any other kind covered with copper. For example, sheet iron covered with copper would be cheaper than tinned iron for roofs of buildings, &c.; and plate iron, if covered with copper, would be excellent for making steam-boilers so as to prevent incrustations, &c. Cheapness is an important item in the process. If the process is expensive, then it can be of no general benefit, for pure copper would be preferable; if cheap, it is a most important discovery. A method of covering iron with brass, copper, &c., has long been known; but to cover it and make the copper unite with the iron, like tinned iron, has hitherto been considered problematical. The invention of Mr. Bucklin promises to fulfil every condition desired in making coppered iron. Cast, malleable, and wrought iron can be coated with copper by the new process.

The process consists in first removing the oxide from the iron to be coated, then covering it with a medium metal which has a great affinity for the iron, and afterwards dipping the iron so prepared into molten copper, which, by the galvanic action of the medium metal, makes the copper intimately combine with the iron, and form a complete coating. The oxide is removed from iron by means of diluted sulphuric acid, in which the castings or sheets are rubbed with sand; after this they are washed and dipped into a solution of the muriate of ammonia, dissolved in a suitable vessel, when they are ready for the next process. This consists in dipping the sheets or plates into molten zinc, immediately after they are lifted out of the sal ammoniac solution. The surface of the molten zinc should be covered with dry sal ammoniac, to pre-

vent the evaporation of the metal. The iron is soon covered with a coating of zinc, and forms what is termed galvanized iron. At hand the operator has a crucible or pot containing melted copper covered with some incombustible substance as a wiper, and he at once dips the zinked iron into this, in which it is kept until it ceases to hiss, when it is taken out and found to be covered with a complete and durable coating of copper. By dipping the iron thus coppered into the solution of sal ammoniac, then into the zinc and the copper, repeating the process, coat upon coat of the copper will be obtained, until it acquires any degree of thickness. The black oxide is prevented from forming on the copper by dipping it afterwards in the sal ammoniac solution, and then washing it in pure water.

LOCOMOTIVE TRIAL TRIP.

An experiment made on the 18th ult., upon the Delaware, Lackawanna, and Western Railroad, seems to challenge the world for its equal in the capacity and draught of locomotive engines:

The Ontario is a ten-wheel engine, six drivers, 4 feet 6 inches in diameter, connected; cylinders 17 inches in diameter, 24-inch stroke; manufactured by Rogers, Ketchum & Grosvenor, Paterson, N. J.

Weight on drivers,	50,000 lbs.
Weight on trucks,	17,000 "
Total weight of engine,	68,200 lbs.
Weight of tender with wood and water,	40,400 "
Weight of engine and tender,	108,600 "

The Wyalusing is a ten-wheel engine, six drivers, 4 feet 6 inches diameter, connected; cylinders 17 inches diameter, 24-inch stroke; manufactured by Danforth, Cooke & Co., Paterson, N. J.

Weight on drivers,	48,200 lbs.
Weight on trucks,	17,600 "
Total weight of engine,	65,800 lbs.
Weight of tender, wood, and water,	40,000 "
Weight of engine and tender,	106,200 lbs.

The first experiment was made with a train composed of 100 four-wheel cars of coal,

Whose gross weight was	706 tons	1,100 lbs.
Deduct weight of cars,	300 "	100 "
Total weight of coal,	496 tons	1,000 lbs.

The Ontario, T. Duncan, engineer, I. T. Puterbaugh, conductor, attached to the above train at Tunkhannock Station, and started up a grade of 21 feet in the mile, at the rate of five miles an hour for one mile, and came to a stand on a reverse curve; cut off nine cars, leaving ninety-one cars, weight 725 tons, with which she went to Hopbottom Station, a distance of about six miles, at the rate of seven miles per hour, the grade continuing the same.

The Wyalusing, John Warren, engineer, A. Hunt, conductor, was then attached to the whole train of one hundred cars, at 10.28 o'clock, and arrived at Oakley's Station at 10.55, making the run up a grade of 21 feet, through continuous curves of about 1,000 feet radius, at four miles an hour.

The Ontario again attached to the same train of one hundred cars at Oakley's, and drew the train at the rate of six miles an hour, under circumstances similar to the Wyalusing, grade and curves continuing the same.

At New-Milford another hundred cars were added to the train, making a train of two hundred cars, 2,652 feet long, or over half a mile.

Total weight of train, including engine, tender, &c.,	1,653 tons 400 lbs.
Deduct weight of engine, tender and cars, - -	655 " 1,300 "
Total weight of coal, - - - -	997 tons 1,100 lbs.

The Ontario, attached to the above train, started the whole train on a level, out of a switch, both ends of the train being on the curve at the same time. The trip was made from New-Milford to Great Bend, a distance of six miles, in thirty minutes, being at the rate of twelve miles an hour, overcoming in the distance a grade of fifteen feet to the mile, for about three fourths of a mile.

CONDENSED HISTORY OF STEAM.

About 280 years B. C., Hiero of Alexandria formed a toy which exhibited some of the powers of steam, and was moved by its power.

A. D. 450, Anthemius, an architect, arranged several caldrons of water, each covered with the wide bottom of a leathern tube, which rose to a narrow top, with pipes extended to the rafters of the adjoining building. A fire was kindled beneath the caldrons, and the house was shaken by the efforts of the steam ascending the tubes. This is the first notice of the power of steam recorded.

In 1543, June 17, Blasco D. Garoy tried a steamboat of 200 tons, with tolerable success, at Barcelona, Spain. It consisted of a caldron of boiling water, and a movable wheel on each side of the ship. It was laid aside as impracticable. A present, however, was made to Garoy.

In 1660, the first railroad was constructed at Newcastle-on-Tyne.

The first idea of steam engines in England was in the Marquis of Worcester's "History of Inventions," A. D. 1663.

In 1710, Newcommon made the first steam engine in England.

In 1718, patents were granted to Savary for the first application of the steam engine.

In 1764, James Watt made the first perfect steam engine in England.

In 1736, Jonathan Hulls set forth the idea of steam navigation.

In 1778, Thomas Paine first proposed this application in America.

In 1781, Marquis Jouffry constructed one on the Saône.

In 1785, two Americans published a work on it.

In 1789, William Symington made a voyage in one on the Forth and Clyde Canal.

In 1802, this experiment was repeated.

In 1782, Ramsey propelled a boat by steam at New-York.

In 1787, John Fitch, of Philadelphia, navigated a boat by a steam engine on the Delaware.

In 1763, Robert Fulton first began to apply his attention to steam.

In 1793, Oliver Evans, a native of Philadelphia, constructed a locomotive steam engine to travel on a turnpike road.

The first steam-vessel that crossed the Atlantic was the Savannah, in the month of June, 1819, from Charleston to Liverpool.—*Hunt's Merchants' Magazine.*

THE POLYTECHNIC COLLEGE OF PENNSYLVANIA.

This institution, recently chartered by the Pennsylvania Legislature, has secured an edifice in Philadelphia, and will soon be in active operation. This college is designed to include in its organization a College of Mines, of Agriculture, of Arts, and of Manufactures, and to afford those destined for these important branches of industry, a thorough scientific education. The application of science to the arts is daily rendering them more powerful sources of national progress, and demanding increased intelligence in those engaged in their prosecution. The civil and the mining engineer, the architect, the manufacturer of chemicals, of sugar, and of glass; those engaged or interested in the productions of the plough, the anvil, the furnace and the loom; all these have, under the stimulus of modern science and of modern competition, assumed a new and nobler position; and hence their proper education has become an object of deep public moment, and one closely affecting national prosperity.

The plan of organization will comprise the following departments:

1. Mathematics and Civil Engineering.
2. Mechanical Philosophy and the principles of Machines.
3. Metallurgy, and Industrial, Agricultural, and Analytical Chemistry.
4. Mining Engineering, Mineralogy, and Geology.

A well-supplied analytical laboratory, sections and models of mines and machinery, a geological and mineralogical cabinet, field operations, and architectural and mechanical drawing, will afford ample facilities for thorough and practical instruction. Students will be enabled to pursue one or more studies for a year, term, or less period, and after examination, will be granted certificates of capacity accordingly.

EUROPEAN MANUFACTURES.

France.—The mortgage debt of France as recorded is 12,500,000,000 francs; deduct from this questionable debt 2,500,000,000, it leaves 10,000,000,000; interest yearly at 9 per cent. is 900,000,000; net annual revenue of all the real estate in France is 1,600,000,000; interest on mortgage is 900,000,000; direct land tax is 160,000,000; additional tax is 80,000,000—making 1,140,000,000—balance left in the hands of owners is 460,000,000 francs. Divide that sum by 20,000,000, representing 4,000,000 families at five persons each, and it leaves in the hands of each twenty-three francs; but as the mortgages are not all paid, call it fifty francs, or ten dollars a head.

Germany now manufactures about sixty million pounds of native wool in addition to what she imports. Formerly she exported her wool to England, and paid 12 per cent. duty in addition to expenses. She has learned better since. In 1834, the population of the States having the Zollverein was 23,478,120; in 1847, 29,461,381, showing an increase of 25½ per

cent. in fourteen years, notwithstanding famine and emigration. The late census showed a population of 30,009,639. The customs duties per head in 1834, 18.5 silver groschen; 1845, 29.4; 1845, 23.5; 1852, 26.1. The chief cause for the decline in duties is the diminution of sugar imports, owing to home manufacture. If the home-made sugar had paid the same taxes as the imported, the receipts from customs would have been 27.9 per head, or little less than in 1845.

Russia presents an example of progress with most of the European States. By a system of protection she has largely augmented her wealth and resources. In 1812, Russia had 136 cloth factories; in 1824, 324; in 1812, 129 cotton factories; in 1824, 484. From 1812 to 1839, her manufacturing establishments more than trebled, and since then in a much greater ratio. In 1843, but one sixth of her manufactured articles were imported. Imports, exports, and revenues are all increasing. Her imports of indigo from England increased from 3,225 chests in 1849 to 5,175 in 1852, an increase of 60 per cent. in three years. These figures show forcibly her industrial tendencies, which must in time, and with the help of favoring internal political changes, transform the nation from a warlike and barbarous nation into a civilized and peaceful one.

Portugal, Turkey, and the Papal States are the only countries in Europe that are not increasing in wealth.

SCIENTIFIC EXPERIMENTS.

The Chromatype.—The Chromatype, discovered by Mr. Hunt, consists in washing good letter-paper with the following solution:—Bichromate of potash, 10 grs.; sulphate of copper, 20 grs.; distilled water, 1 ounce. Papers prepared with this are of a pale yellow color: they may be kept for any length of time without injury, and are always ready for use. For copying botanic oil specimens or engravings, nothing can be more beautiful. After the paper has been exposed to the influence of sunshine, with the objects to be copied interposed between them and it, it is washed over in the dark with a solution of nitrate of silver of moderate strength; as soon as this is done, a very vivid positive picture makes its appearance; and all the fixing these photographic pictures require, is well washing in pure water.

Magic Lantern.—*To paint the Glasses.*—Draw on a paper the subject you desire to paint. Lay it on a table, or any flat surface; then draw the outlines with a very fine pencil, dipped in varnish mixed with black paint, and when dry, fill up the other parts with their proper colors. Transparent colors must be used for this purpose, such as carmine, lake, Prussian blue, verdigris, sulphate of iron, tincture of Brazil-wood, gamboge, &c.; and these must be tempered with a strong white varnish, to prevent them from peeling off. Then shade them with black, or with bistre, mixed with the same varnish. Movements of the figures are easily made by painting the subject on two glasses, and passing them at the same time through the groove.

Amusing Transmutations.—Have in one vessel some sulphuric acid, and in another an infusion of nut-galls; they are both colorless and transparent: mix them, and they will become black and opaque. Put into a wine-glass of water a few drops of prussiate of potash; and into a second glass of water, a little weak sclution of sulphate of iron in water; pour the colorless mixture

together into a tumbler, and they will be changed into a bright, deep-blue color. Mix a solution of prussiate of potash with that of nitrate of bismuth, and a yellow will be the product. Mix a solution of prussiate of potash with that of sulphate of copper, and the mixture will be of a reddish-brown color. Put a drachm of powdered nitrate of cobalt into a phial containing an ounce of the solution of caustic potass; cork the phial, and the liquid will assume a blue color, next a lilac, afterwards a peach, and lastly a light red.

THE VISIBLY-GROWING ACORN.—Cut a circular piece of card to fit the top of a hyacinth-glass, so as to rest upon the ledge and exclude the air. Pierce a hole through the centre of the card, and pass through it a strong thread, having a small piece of wood tied to one end, which, resting on the card, prevents its being drawn through. To the other end attach an acorn, and having half filled the glass with water, suspend the acorn a little above the surface. Keep the glass in a warm room, and in a few days the steam which has generated in the glass will hang from the acorn in a large drop. Shortly after, the acorn will burst, the root will protrude and thrust itself into the water, and in a few days more a stem will shoot out at the other end, and rising upwards, push against the card, in which a hole must be made to allow it to pass through. From this stem small leaves will be observed to sprout, and in the course of a few weeks you will have a handsome oak plant, several inches in height.

SELF-REGISTERING COMPASS.

M. DELEUIL has presented to the French Academy a self-registering compass of his own construction. Its object is to register the changes in the course of a vessel for every three minutes during the twenty-four hours. The marking is made on a compass-card, and it enables the captain to overlook most effectively the manœuvres of the steersman and pilot.

This self-register consists (according to *Silliman's Journal*) of three principal parts: 1, a clock-movement placed at the centre of the apparatus, for causing the point or pivot carrying the needles to move up and down at regular intervals; 2, an endless screw, furnished with a nut carrying the point for piercing the paper; 3, the compass-card, made of three needles fixed to a sheet of mica, a material as little hygrometric as possible. The mica is covered with a disk of velvet firmly glued to it by means of strong glue, and whose tissue has been saturated by a kind of glue that is soft when cold; on cooling, the glue has an even surface, pierced with an infinity of pores, into which the point will readily penetrate after having pierced the paper compass-card. Owing to this addition, the process of puncturing does not stop the movement of the needle—a principle essential to the success of any method of self-registering.

When the needle is fixed towards the north, the axis or diametral line of the compass-card is placed in the line of the axis of the ship, and the punctures, made every three minutes, will indicate the deviation of this axis with reference to the magnetic needle; the succession of points, or the nearly continuous line which they trace, shows to the eye the course of the route.

MECHANICAL AND AGRICULTURAL RECORD, ETC.

COFFEE.—There are about a dozen species of the genus to which coffee belongs, but all of them are inhabitants of tropical countries. The *Coffea arabica* alone is cultivated, and yields the article known in commerce. Its favorite locality is on hill-sides, at an elevation of from 1,000 to 3,000 feet above the level of the sea. The following is an estimate of the coffee produced in every part of the world at the present time:

Brazil,	176,000,000 lbs.
Java,	126,000,000 "
Cuba and Porto Rico,	30,000,000 "
St. Domingo,	35,000,000 "
Laguayra,	35,000,000 "
Costa Rica,	9,000,000 "
British West Indies,	8,000,000 "
Ceylon,	40,000,000 "
Malabar and Mysore,	5,000,000 "
French and Dutch West Indies,	2,000,000 "
The Philippines,	3,000,000 "
Sumatra,	5,000,000 "
Celebes,	1,000,000 "
Arabia,	3,000,000 "
Total,	476,000,000 lbs.

The cost of all this to the consumers is not less than one hundred millions of dollars a year. The yearly consumption of coffee in the United States is 5.57 lb. per head, five times more than in Great Britain. It is thought that the introduction of coffee and tobacco have conduced to the promotion of sobriety, and that the enormous sums expended in these commodities would without them be thrown away in buying intoxicating drinks.

MR. SAMUEL C. DOWNES, a pattern-maker at the Acushnet Foundry, has invented a machine for punching copper, which is said to be a great labor-saving affair.

A RAILROAD FACT.—A North Carolina correspondent of the New-York *Times* makes the following statement:

"The advantages offered by railroads to the farms of inland districts are strikingly shown by the following, which was narrated to me as a fact: A gentleman near Raleigh, who had a quantity of wheat to dispose of, and seeing it quoted at high prices in a paper of Petersburg, Va., and seeing at the same time the advertisement of a commission-house there, wrote to the latter, making an offer of it. The next day he received a reply by mail, and by the train a bundle of sacks, in which he immediately forwarded the wheat, and by the following return mail received his pay at the rate of $1.20 a bushel, the top price of the winter. At the same time, forty miles from where he lived, off the line of the railroad, wheat was selling at 60 cents a bushel. There was one county, during the time I was in North Carolina, to and through which the roads were absolutely impassable, and which had not been heard from at the capital for a month. It is not, therefore, incredible that it should cost 60 cents to move a bushel of wheat forty miles."

A CHEAP FILTER.—As efficient a filter as can possibly be constructed may be made in a few minutes by any person, and at the cost of a very few pence. Procure a clean flower-pot of the common kind; close the opening of the bottom with a piece of sponge, then place in the inside a layer of small stones, previously well cleansed by washing; this layer may be about two inches deep, the upper stones being very small; next procure some freshly-burnt charcoal which

has not been kept in a damp or foul place, as it rapidly absorbs any strong smells, and so becomes tainted and unfit for such purpose; reduce this to powder, and mix it with about twice its bulk of clear, well-washed, sharp sand: with this mixture fill the pot to within a short distance of the top, covering it with a layer of small stones; or, what is perhaps better, place a piece of thick, close flannel over it, large enough to tie round the rim of the pot outside, and to form a hollow inside, into which the water to be filtered is to be poured, and which will be found to flow out rapidly through the sponge in an exceedingly pure state. The flannel removes the grosser impurities floating in the water, but the filter absorbs much of decaying animal and vegetable bodies actually dissolved in it. When it becomes charged with them, it loses this power; hence the necessity for a supply of fresh charcoal at intervals.

Railway Axles.—Mr. D. Cokley, of Pittsburgh, Pa., has shown us the model of a new compound axle invented by him, designed to obviate the mischief and perils now encountered on railroad curves, where the wheels on one side of the car must necessarily travel farther and faster than those on the other, producing a tremendous strain on the axle, and frequently breaking it. We consider the object sought by this invention an important one, and trust it is attained. Whether this invention is preferable to others, especially that of Mr. P. G. Gardiner, of our city, is a question not for editors but for practical engineers, to whom we earnestly commend it. The old-fashioned axle is clearly vicious and dangerous. Let the best attainable substitute be designated and adopted forthwith.

Machine for tunnelling the Alps.—A very ingenious apparatus has been devised to facilitate the progress of the Piedmontese railroads, in which tunnels have to be cut under mountains. The excavating machine cuts the channels in the rock by means of several series of chisels placed one beside the other, in straight lines; these lines of cutting tools are so arranged as to be capable of a slight motion in the direction of the grooves after every stroke; the object of this is to bring the chisels to bear upon all the spaces lying between the several cutting tools situated in the same line, so as to produce not a succession of holes, but a continuous channel similar to a very wide saw-cut. This lateral shifting of the lines of chisels, which takes place alternately from right to left and from left to right, is caused by a corresponding motion given to the frames in which they are fixed. Each chisel is driven against the rock by a spiral spring coiled around it. This spring, driving the chisel forcibly against the rock, obliges it to act efficaciously, notwithstanding the slight inequalities at the bottom of the channel, arising from a want of uniformity in the resistance of the stone. When the machine is in operation, the several lines of chisels are all drawn back simultaneously, by means of a species of cam, or movable bar. The apparatus is so arranged as to enable each chisel to strike 150 blows in a minute. The machine at the same time sets in motion a pump which forces a constant supply of water into a reservoir, the upper part of which is filled with compressed air. By this means the water is driven out in jets, through small pipes placed between the chisels, and is thus made to play upon the grooves, where it performs the double office of preventing the cutting instruments from becoming heated, and removing the dust and broken stone which would otherwise accumulate in the grooves, and thereby prevent the effectual working of the excavator.

The Cotton Gin.—Whitney, the inventor of the cotton gin, placed one upon his plantation in Georgia, the first that was used in Wilkes county, and perhaps the first in the State. He and his partner, Durkee, erected a gin-house, into which women only were allowed to enter. Mr. Lyon, who lived a few miles distant, by dressing himself in women's clothes, obtained an entrance, and after viewing the machinery made his improvement, the saw gin. Mr. Whitney got his first idea of the invention from a gin used to prepare rags for the manufacture of paper.

Horticulture at Boston.—At one of the weekly exhibitions of flowers and fruits of the Massachusetts Horticultural Society, early in July, which was re-

ported as "very meagre," we notice FLOWERS by several contributors; fine CHERRIES, by six contributors; GRAPES, "noble specimens," by Mr. Nugent; "magnificent specimens" of various varieties of do., by Mr. Durfee, Fall River, and also by three others; PEACHES, "splendid," from Otis Johnson; GIANT RASPBERRIES, by another contributor; POTATOES, "fine," by another; and VEGETABLES by another, making in all about twenty contributors. They do this up in capital style in the "city of notions."

LIST OF STATE FAIRS FOR 1853.

Indiana,	———,	Sept.	———
Vermont,	Montpelier,	"	13, 14, 15.
Kentucky,	Lexington,	"	13, 14, 15, 16, 17.
New-York,	Saratoga,	"	20, 21, 22, 23.
Ohio,	Dayton,	"	20, 21, 22, 23.
Pennsylvania,	Pittsburgh,	"	27, 28, 29, 30.
Michigan,	Detroit,	"	28, 29, 30.
Wisconsin,	Watertown,	Oct.	4, 5, 6, 7.
Illinois,	Kane co.,	———	———
Massachusetts Horticultural Society,	Boston,	Sept.	21, 22.
North-western Fruit-Growers' Asso.,	Chicago,	Oct.	4, 7.

The following table gives the time for holding county fairs in Massachusetts:

Worcester County Society,	Sept. 21 and 22.
Norfolk County Society,	Sept. 27 and 28.
Essex County Society,	Sept. 28 and 29.
Housatonic Society,	Sept. 28 and 29.
Worcester West Society,	Sept. 30.
Bristol County Society,	Oct. 4 and 5.
Middlesex County Society,	Oct. 4 and 5.
Berkshire County Society,	Oct. 5 and 6.
Plymouth County Society,	Oct. 6.
Franklin County Society,	Oct. 6 and 7.
Barnstable County Society,	Oct. 7.
Hamden, Franklin, and Hampshire County Society,	Oct. 11 and 12.
Hamden County Society,	Oct. 13 and 14.
Hampshire County Society,	Oct. 26.

WATER-PROOF FROCK.—The following is recommended by Mr. Johnson, of Louisiana, as a cheap mode of providing water-proof sacks or frocks for negroes. The quantities named are for a plantation of fifty or one hundred negroes: 20 gallons linseed oil, into which mix 3 lbs. of litharge, well pulverized, after the oil has boiled a few minutes, which should be well stirred in. Into this, when boiling hot, dip a sack or over-coat, &c., well made of common cotton cloth, wring as dry as possible, and then hang in the sun a few days. It costs less than sixty cents, and will last a year or two.

CHINAMEN IN CALIFORNIA.—In Yuba county, by a recent State census, there are 2,100 Chinese; in Nevada county, 3,886; in Placer county, 3,019; and in Sacramento county, 804. It is estimated that there are at least 25,000 Chinese in the State.

VINEYARDS IN CALIFORNIA.—In Los Angelos county are 105 vineyards, containing 450,000 vines, each of which produces, on an average, five pounds of fruit. Most of this is manufactured into wine and brandy, of each of which there are produced about 2,000 barrels. The grapes are of the most delicious quality, and the wine is said not to be inferior to the "sparkling Catawba." This growth is also found in other counties.

STATISTICS OF FRANCE.—Present population is 35,781,821. The number of marriages is constantly decreasing, the number of births is little more than that of deaths, so that the increase of population is considerably less than formerly. About $8,000,000 is annually appropriated to the support of religion, of which, all but about half a million is bestowed upon the Roman Catholic Church. The number of Protestants is about one and a half millions.

Remarkable Growth.—A correspondent, who gives no name, writes us that on the land of Mr. Duncan Hood, Stockport, N. Y., is a tree, grown from the stone of a rare-ripe, given him by a friend, on which are to be seen both nectarines and peaches. He says the tree is four or five years old. Not having any responsible voucher for these statements, we publish them in this form. When their truth is ascertained, it will become a subject of examination by the curious.

Industry of Philadelphia, &c.—In Philadelphia and vicinity, in 1831, was estimated as follows:—104 warping-mills at work, sufficient to employ about 4,500 weavers, more than 200 dyers, 3,000 spoolers, 2,000 bobbin-winders. The wages of these operatives amount to $1,470,000; 81,000 yards a day are manufactured, or $24,300,000 per annum, of the estimated value of $3,888,000. The capital now invested in manufactures is $33,737,911, and number of hands employed is 59,106.

According to an official statement, it appears that we raise annually $143,000,000 in wheat; $391,200,000 in Indian corn; $490,275,000 in oats; $74,125,000 in Irish potatatoes, and $129,000,000 in cotton; the whole crop being $1,209,480,000.

The Railroads in France, now completed, are twenty in number, and 1,531 miles in extent. The longest is the Northern, which is 368 miles, including branches. Five other lines are to be constructed, and are already commenced, extending 843 miles. All the railroads have received aid from the State, which, in all, has disbursed more than $66,000,000 in money on works, and $11,000,000 in loans.

Carrots for Horses.—The stable-keepers are beginning to find that these vegetables form a cheap and nutritious food to mix with grain for their horses. It is better to give a working horse a peck of carrots and four quarts of oats or corn-meal a day, than to give him six quarts of meal.

Glass Pens.—It is reported that glass pens are now made, possessing the requisite qualities to write with, and that they will soon supersede all others. They are anti-corrosive by the most impure ink, at least as much as gold, and their cost will be but that of the making.

A practical mechanic and engineer of high standing in this city suggests, as a preventive of accidents at drawbridges, that, in addition to the usual signal, a gate should be erected across the track at a distance of a quarter of a mile from the bridge. This gate could be so arranged as to be closed by the draw-tender when the draw is open. It could be made high enough to strike the funnel of the locomotive, and would, in case of carelessness on the part of the engineer, give the brakemen ample warning of the danger, and would give time to stop the train before reaching the bridge. The expense of such a gate would not exceed $500, and as a mere matter of economy, something of the kind should be adopted by every railroad. The recent accident on the New-Haven road will cost the corporation more than it would require to erect and perpetually maintain a dozen such gates.

The Geology of the Sierra Nevada.—Professor Trask has made a report to the Legislature of California on the geology of the great mountain range forming the eastern boundary of the State, which is not yet published, but which promises to supply a great deal of interesting information. It would seem that the earth of the country is almost as rich in platinum, silver, and copper, as it is in gold. Chromium, too, a most valuable pigment, abounds in many places, sometimes in large amorphous masses of sixty pounds weight.

There arrived at the port of New-York during the month of May, 30,234 emigrant passengers, of which number 12,179 were Irish, 10,986 German, 2,388 English, 1,214 Scotch, 1,072 French, 857 Swiss, and the remainder were from several other countries of Europe. During five months of the present year, 80,031 emigrants were landed at that port; the year previous, 100,225; in 1851, 100,560; and in 1850, 79,402.

IRON IN TENNESSEE.—From tables published in *Hunt's Merchants' Magazine*, we learn that there are now in operation on the Cumberland river, Tennessee, nineteen furnaces, nine forges, and two rolling-mills, which produce 44,500 tons of iron per annum, valued at $1,673,000. The capital invested is $1,216,000. There are employed in the works 1,395 white laborers, and 1,810 negroes, who consume 1,460,000 pounds of pork, and 35,000 bushels of corn per year. The iron interests of Tennessee are rapidly growing into importance, and we have no doubt will constitute a large element in that wonderful prosperity which the State seems destined to enjoy.

NEW COMPOUND RAIL.—A new rail for roads has been invented by Wells & Serrill. It is compound, consisting of an interior and exterior rail, so arranged that the joints are broken, that is, that the parts lap over one another. No rivets or bolts are used, and an ordinary workman can lay or repair it. The rail may be used with or without chairs. When the exterior rail is worn out, it can be renewed, whilst at least two fifths of the entire bar, which is not subject to wear, is saved. It will be patented. The plan strikes us as a good thing, and is at least worth the attention of railroad men.

FALL RIVER—ADDITIONAL BOAT.—The travel on this route has become so great that the Company has been compelled to put on the "State of Maine," as a day-boat to Newport. Leaving New-York at 8 A. M., on Tuesdays, Thursdays, and Saturdays. Returning, it leaves Newport at 7 A. M. on the alternate days.

ANOTHER POTATO SECRET OUT.—The country gentleman is informed that the secret of E. C. Roberts in regard to the prevention of the potato disease, is to leave the potatoes in the ground all winter. For this he asks a dollar, with a pledge not to *tell of it*. The secret is neither new nor good. It was thoroughly tried years ago in England and Ireland, and, like most other prescriptions for the disease, was found ineffectual.

SUGAR IN IRELAND.—The manufacture of beet-root sugar has been introduced into Ireland with great success. The produce of last year amounted to 142 bags, containing from three to four hundredweights each. These have been sold; and it is now contemplated to start two other establishments, on which 40,000 tons of the root may be produced in a year. At present 240 persons are employed in the manufacture; but if the project be carried out, this number will be largely increased, and a great addition made to Ireland's industrial resources.

SPECIAL MANURE FOR GRAPES.—The Wine Committee, at the exhibition of the Cincinnati Horticultural Society, reported that of two specimens of wine, one from grapes to which a special manuring of potash had been given, the wine from the manured grapes was "bright, clear, and mellow, like an old wine." The other was declared to be less matured in all its qualities, nor was it clear. The grapes themselves from the two portions of ground were also presented to the Committee. "Both were delicious and well ripened, but it was considered that those from the manured land were sweeter, and that the pulp was softer."

IMPROVEMENT IN CULTIVATORS.—An improvement in these useful implements of husbandry has been made by Samuel Churchill, of West Henrietta, N. Y. The nature of the invention consists in a pecular manner of elevating and depressing the frame which holds the shares, and the shares themselves, by means of which they may be made to penetrate the earth the required distance, and make deep or shallow furrows as desired, or be raised and kept entirely from the earth when the implement is being drawn from one locality to another. The mode adopted by Mr. C. to accomplish this object is by means of levers and connecting rods or stirrups attached to the frame, which are under the immediate control of the driver. Measures have been taken to secure a patent.

MANUFACTURE OF BOHEMIAN GLASS.—A French Company, of ample means, have purchased a tract of land at a short distance east of the Crystal Lake, near New-Rochelle, where they have commenced the erection of a magnificent

establishment for carrying on the manufacture of Bohemian glass-ware. The *Westchester News* states that the buildings will be of brick and stone, and put up in the most substantial manner. The principal building will be upwards of 300 feet long, and four or five stories high; while there will be several other buildings of smaller dimensions, adapted to the wants of the various branches of the business. One furnace alone will occupy a space of 50 feet square. The whole work is to be pushed most vigorously; as soon as finished, quite a colony of workmen and their families are to be brought from France to carry on the business, which is expected to be very extensive. For the accommodation of the French families who are expected to be employed in the establishment, about fifty dwellings will be erected by the Company. New streets are being laid out around the works.

Making Paper in North Carolina.—There are five paper-mills now in operation in North Carolina, and another, with a capital of $25,000, is in process of erection, about six miles from Raleigh. The two mills near Raleigh (the "Manteo" and the "Neuse" mills) consume annually about one million and a half pounds of old rags; and the other four mills, viz.: at Fayetteville, Shelby, Lincoln and Salem, as much more; making 3,000,000 pounds of stock used annually in North Carolina.

A New Mode of Manufacturing Paint-Brushes.—A very simple and effectual mode of manufacturing paint-brushes, without involving the necessity of driving the handle through the centre of the brush, has been invented by Adonijah Randel, of Williamsburg, N. Y. The nature of his invention consists in placing the hair of which the brush is to be made in a metal ring, and securing it therein by cementing or sizing the roots, so as to prevent the escape of the hairs, and then uniting the back end of the ring, by riveting or otherwise, with a back plate which receives the handle. The hair is most effectually secured in this manner, and it forms a solid brush; it is easily constructed, durable, and more convenient than those in use. Measures have been taken to secure a patent.

A New Apple Tree Enemy has made its appearance in Maine. It is a slender worm, about half an inch long, striped with greenish-white and dark stripes. When jarred, they spin down and hang by a fine thread. They move about by rapid crawling. They eat leaves, buds, and fruit indiscriminately. They are unlike the canker-worm or any other known to the oldest inhabitant.

The latter worm has done a great deal of damage this year in Connecticut and Massachusetts. In a recent trip through portions of these States, we saw many apple trees that looked as brown as though killed by fire. They also attacked many other trees, particularly elms.

The Shingle Trade of Chicago is enormous, amounting last year to over 77,000,000. The increase this year has thus far been 25 per cent., and it is quite safe to estimate this year's business at over 100,000,000. They are shipped to the West and South in great quantities, thus furnishing freights for canal-boats, and increasing the canal revenue.

The River Amazon is likely to be opened to steam navigation much sooner than was expected; and if it is freely opened, it will be the great event of the day. General Echenique, the President of Peru, has already taken steps, on behalf of that Government, to put on the Amazon two iron steamers, each to cost about $100,000, whose business is to be the exploration of the river and its branches. All nations are to enjoy the benefit of this trade and commerce. The Emperor of Brazil, we are gratified to learn, so far from resisting this Peruvian movement, is coöperating with it. He has conceded a national Company the right of navigation, with certain privileges, in conjunction with Peru. The Company was to commence its work in May last; and although we have no definite information that it has really begun, yet there seemed to be no doubt that it was intended to go into operation either in June or July.

The Potato Rot.—Professor Bollman, a Russian Councillor of State, has published a work on the prevention of potato rot. He discovered accidentally, and has subsequently verified by experiment, the fact that seed potatoes thoroughly

dried will produce a sound crop. The *Courier*, which gives an account of this discovery, says:

"The temperature required to produce the desired result is not very clearly made out. Mr. Bollman's room in which his first potatoes were dried was heated to about 72°, and much higher. By way of experiment, he placed others in the chamber of the stove itself, where the thermometer stood at 136°, and more. He also ascertained that the vitality of the potato is not affected, even if the rind is charred."

CHEROKEE AND BEAVER COPPER MINES.—Mr. J. D. Whitney, the geologist, has made a report upon the Cherokee and Beaver copper mining locations, situated in Polk county, Tenn. The distance of these mines from market has thus far prevented the working of them, but this difficulty is about to be obviated by making a road to Cleveland, on the East Tennessee and Georgia Railroad, when the ores will have but 35 miles of carriage by wagon. The deposit of black oxide of copper on these locations Mr. Whitney says he has never seen equalled in any other location. At the Hiwassee Mine this black ore is said to be 45 feet in width, and averages about 2 feet thick. Beneath this is the undecomposed ore. Should this black oxide prove to average 10 feet only in width, it would yield 6,300 tons to the mile, worth $750,000. Mr. Whitney's report says:

The *Cherokee Company's* location is the one next south of that of Tennessee, and has the same vein extending through it for a distance of about three quarters of a mile. The tract contains about 400 acres. The outcrop of *gossan* is as well defined as any where on the vein, and appearances indicate that the vein is as well developed on this location as on those farther north. These are very favorable situations, where the work of mining can be carried on with small cost by driving in levels on the side of the ridges at right angles to the course of the vein. Such a one has been commenced near a small saw-mill at the base of the ridge, and has been carried in about 80 feet, but not sufficiently extended to develop the character of the vein.

AGRICULTURAL PREMIUMS IN VERMONT.—The amount of premiums offered by the Vermont State Agricultural Society, at its next annual Fair in Montpelier, Sept. 13, 14 and 15, 1853, is $3,401: On horses, $721; cattle, $638; sheep, $414; swine, $146; poultry, $24; dairy, $93; maple sugar, $35; honey, $13; manure, $25; field crops, $187; fruit and fruit trees, $76; vegetables, $26; ploughing, $136; farm implements, $100; domestic manufactures, $37; essays, $101; discretionary premiums, $600.

REDUCING BONES FOR MANURE.—The *American Farmer* gives the following method of reducing crushed bones without sulphuric acid:—Mix two bushels of ashes and one of salt with each bushel of crushed bones; moisten the bones first, and leave the whole in pie four or five weeks before using the mixture, shovelling it over two or three times during that period.

The above process will answer very well for soils deficient in soda, chlorine, potash, and phosphate of lime; but for soils deficient in sulphuric acid, as most soils are, we should prefer dissolving the bone, and then adding the other constituents if required.

CHARCOAL FOR SWINE.—It is perhaps not generally known that one of the best articles that can be given to swine, while in preparation for the tub, is common charcoal. The nutritive properties are so great, that they have subsisted on it without other food for weeks together. Geese confined so as to deprive them of motion, and fattened on three grains of corn per day and as much coal as they can devour, have become fat in eight days. The hog eats voraciously after a little time, and is never sick while he has a good supply. It should always be kept in the sty, and be fed to the inmates regularly, like all other food.

HOW TO MAKE CRAYONS.—Every school room has, or should have, black boards. On these, chalk is almost universally employed. There are many objections to the use of chalk, not the least of which is, that after a problem is performed, the fingers and clothing present a *dirty white* appearance. Crayons are far preferable. Could they be generally employed, it would be a favor done to some delicate hands, to say nothing of a large amount of wearing-apparel.

White crayons may be made of Paris white or Spanish white, which are nearly

the same, and wheat flour and water. The correct proportions are: five pounds of Paris white, one pound of flour, and sufficient water to make a dough of these materials, hard enough not to crumble, and soft enough to roll. Little balls of this are then rolled out into cylinders about the size of a pipe-stem, and laid away in a warm place, or in the sun, to dry; the drying will generally require from 12 to 24 hours.

The process of rolling may be performed upon a table, or any flat board. This article is far superior to chalk.

FATTENING ANIMALS.—The Shakers of Lebanon, N. Y., say, after an experience of thirty years, that in fattening swine upon Indian corn, one third is saved by grinding into meal, and that one fourth is saved by cooking—boiling it. This, as we understand it, makes a saving of one half, which is probably somewhat exaggerated, but the saving is no doubt considerable. There can be no doubt that, on all farms where there are considerable numbers of cattle and swine to be fed, a mill and boiling apparatus, though they may be a little costly at first, would ultimately, and soon, indeed, reimburse all the expense. Grind and boil, we say, therefore, to all farmers. The apathy that prevails upon this point in general is very strange. Farmers are generally slow in adopting improvements in agriculture and agricultural implements, and comparatively few feed their cattle on cooked food, while some kinds of it are almost as grateful to the quadruped as to the biped, his lord and master.

ILLUSTRATED RECORD OF THE INDUSTRY OF ALL NATIONS. Nos. 1 and 2. Large quarto. G. P. Putnam & Co. pp. 20. 25 cents.

A double number of this elegant journal is now issued. It is filled with well-engraved illustrations (forty-two in number) of objects of interest to be found in the Crystal Palace, with remarkably good descriptions of each. Every thing about it is in good taste, and is worthy of the publishers and worthy of the Exhibition. Subscribe for it at once, and encourage a commendable object, while you enable the publishers to present a permanent memorial of this great collection, that shall itself do honor to the artists engaged upon it, and at the same time secure a volume that will be an ornament to your library and to your table, and a fund of entertainment in years to come. There will be twenty-six numbers and a supplement. Mr. Putnam's address is 10 Park Place. Mr. P. has also a CATALOGUE of the various articles to be found in the Crystal Palace, so arranged and numbered that any one of them can readily be found. It is of great convenience to any one who wishes not to overlook that in which he has especial interest, and which he might otherwise pass by without noticing its presence.

NEW-YORK IN THE SUMMER OF 1853.

FOR the benefit of our friends from a distance, we give below a list of a few of the more prominent and interesting features presented by our city. We cannot begin better than by referring to CASTLE GARDEN and MADAME SONTAG. The corps of operatic artists which Madame Sontag has engaged is of the very highest order. In herself she is a host, as we have often repeated. But her assistants form a host seldom equalled in any country. SIGNORA STEFFANONI is the best operatic soprano we ever had in this country before the arrival of Madame Sontag. MADAME PATTI STRAKOSCH has lost none of her power in her temporary absence from the stage. SALVI is the most wonderful TENOR. He was one of the chief attractions in the celebrated Havana company that so delighted us a few years since; and no man on the continent pretends to be his equal in that department. BADIALI wears his honors alike untarnished. ROSSI and BENEVANTANO would be distinguished in any other company, and the minor parts are represented with uncommon ability.

MADAME ANNA THILLON, at the Broadway, attracts crowded houses as ever, but we cannot speak of her from our own knowledge.

THE DUSSELDORF GALLERY OF PAINTINGS presents attractions unrivalled in that department. The pictures are numerous, and the entertainment suited alike for the day or evening.

SATTLER'S COSMORAMAS, near Union Park, are admirably painted representations of the most striking views on both continents. Here is something for an entire half day, which will insure perfect satisfaction.

THE BRYAN GALLERY OF CHRISTIAN ART is a collection of paintings, forming an historic series from the commencement of the Christian Era. Such is the description given us by friends who have seen it, and who pronounce it abundantly worthy of attention.

THE VELASQUEZ is one of the best specimens of portrait-painting to be seen in this or any other country.

LATTING OBSERVATORY.—The view from this, the loftiest tower on the continent, we believe, is admirable. The whole of New-York and the adjacent country, the North and East rivers, with the cities and villages which almost cover the adjoining territory, lie before you as on a map. The view is assisted by two or three telescopes.

THE HIPPODROME, THE CIRCUSES and THEATRES, and BARNUM'S MUSEUM, *last but not least*, open their doors for the entertainment of the citizen and the stranger.

The view from TRINITY CHURCH SPIRE is perfect in its way; Broadway, extending under your feet, like a ribbon, for two and a half miles, to Union Square, being seen at a glance.

THE CEMETERIES, especially that at GREENWOOD, present attractions of a different character, but not inferior nor less worthy. Stages run the whole distance, and carry and return you for a shilling, after crossing the ferries.

HIGH BRIDGE, near Harlem, is well worth a visit.

The public institutions of the city are worthy of notice, according to the tastes and the time to be devoted to such objects.

List of Patents issued from June 21 to July 5, 1853.

Barnabas H. Bartol, of Philadelphia, Pa., for Improvement in Refrigerators for Cooling Liquids. Patented in Cuba.

Horatio Clarke, of Dedham, Mass., for Improvement in Bobbins.

Christopher Duckworth, of Thompsonville, Conn., for Improvement in Shuttle box Motion in Looms.

Horatio N. Goodman, of New-Haven, Conn., for Improvement in Melodeons.

Daniel H. Hovey, of Kilborn, Ohio, for Improvement in Machines for Twisting Waxed-ends.

Edmund Morwood and George Rogers, of London, England, for Improvement in Coating Lead with Zinc. Patented in England.

Levi S. Reynolds, of Indianapolis, Ind., for Improvement in Bran Dusters.

Christian Sharps, of Hartford, Conn., for Improvement in Percussion Pellets. Patented in England.

E. E. Shepardson and Edwin Lucas, of New-Bedford, Mass., for Improvement in Tuning Melodeons and other Reed Instruments.

Lauren Ward, of Naugatuck, Conn., administrator of Richard Ward, deceased, of same place, for Improvement in Machines for Turning Irregular Forms.

James Foster, Jr., and Platt Evans, Jr., of Cincinnati, Ohio for Improvement in Metallic Boxes for Presses, &c.

Amzi C. Semple, of Cincinnati, Ohio, assignor to William C. Semple, of same place, for Improvement in Presses.

Napoleon B. Lucas, of Otter Creek, Ill., for Improvement in Threshers and Separators of Grain.

Alanson Abbe, of Boston, Mass., for Improvement in Instruments for correcting Lateral Deviations of the Spine.

J. Cross, of New-London, Ohio, for Improvement in Brushes.

A. M. Day, of Bennington, Vt., for Improvement in Clavicle Adjusters.

George H. Hazlewood, of Boston, Mass., for Improved Cradle and Tête-à-Tête.

Chas. W. Lancaster, of New-Bond st., England, for Improvement in the manufacture of Cannon and other Fire-arms. Patented in England.

Thos. L. Mitchell, of Birkenhead, England, for Improvement in Propelling Vessels. Patented in England.

John North, of Middletown, Conn., for Improvement in Trusses.

Wm. Porter and Edward A. Tuttle, of Williamsburg, N. Y., for Improvement in Lanterns.

Amzi C Semple, of Cincinnati, Ohio, for Improvement in Paddles for Vessels.

Noah J. Tilghman, of Salisbury, Md., for Improvement in Crow Killers.

ADVERTISING DEPARTMENT OF THE PLOUGH, THE LOOM, AND THE ANVIL.

WATER WHEELS.

THE Subscribers offer for sale "Jagger's Improved French Turbine Water Wheel," which they believe to be unrivalled. Circulars and Tables relating to the same may be obtained at this office, or will be forwarded to any one desiring them.

JAGGER, TREADWELL & PERRY,
No. 110 Beaver street, Albany, N. Y.

Nov. 13-tf.

MC'CORMICK'S REAPING & MOWING MACHINE FOR 1853.

THIS celebrated Machine has been greatly improved for the coming harvest, and is warranted superior to any Reaping and Mowing Machines now before the public. Having an IRON Beam, in mowing, the grass passes over freely, already spread; and in Reaping, the grain is LEFT AT THE SIDE of the Machine in sheaves ready for binding. This Machine will cut two acres of grain, or 1½ acres of grass per hour, with two horses. For Sale in every State in the Union, and by

RICHARD T. ELKINTON, 53 South Wharves, Phila.

May, 53.—2t1983.

FOR SALE,

IMPROVED SHORT-HORN & ALDERNEY CATTLE,

Of different ages; the greater part of them bred on the farm of Thomas P. Remington, Esq. Many of the Short Horns are descendants of the herd of the late Mr. Bates, of Kirkleamington, England, justly celebrated as one of the best and most scientific breeders of the age. The Alderneys have been bred directly from the best imported Stock. The Cows are unrivalled as rich Milchers. Apply to

AARON CLEMENT, Agent

for the purchase and sale of improved Stock, &c.,

Sept. tf. **Cedar Street, above Ninth Street, Philadelphia.**

FARMERS' BOILERS, OR LAUNDRY KETTLES,

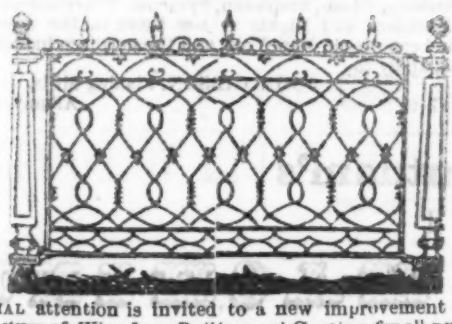
OF ALL SIZES, FOR SALE BY

BARTLETT, BENT & SON,

No. 238 WATER STREET, New-York.

Mar. 1y.*

NEW-YORK WIRE RAILING WORKS.



SPECIAL attention is invited to a new improvement in the manufacture of *Wire Iron Railing and Grating*, for all purposes where wood, cast or wrought iron are used, at half the cost; to wit,—for Cemeteries, public and private grounds, farms, balconies, verandahs, alcoves, &c., from 50 cts. to $2 per lineal foot.

Portable and *permanent* Wire Fence for railroads, farms, parks, lawns, &c., manufactured on an entirely new plan, from 9 to 18 cts. per foot, 4½ feet high, with Iron Posts.

The *Portable Iron Bedstead*, exceedingly ornamental, is so constructed as to fold up into a convenient form for transportation, and only requires to be seen to be adopted.

N. B.—All kinds of Wrought or Cast Iron Buildings made to order, and Designs and Circulars procured by addressing the manufacturer and proprietor,

JOHN S. WICKERSHAM,
240 Broadway.

Warerooms of the New-York Patent Machine Shop.

Works 59 and 61 Lewis street.

Agents, C. B. C. & Co., 215 Pearl street.

Medals have been awarded for the above, both by the Am. Institute of N. Y., and by the Franklin Institute of Philadelphia.

Mar. 13-1y.

WILDER'S PATENT SALAMANDERS,

WITH RICH'S IMPROVEMENT.

The only Safes with Wild-

er's Patent & Rich's Patent

COMBINED, ARE MADE BY

146 Water St.,

STEARNS & MARVIN,

New-York.

The sole Proprietors of Rich's Patent, and joint Proprietors of Wild-er's Patent with Silas C. Herring.

THE GREAT FIRE IN CHILLICOTHE, ONE THIRD THE TOWN BURNT TO ASHES!

CHILLICOTHE, OHIO, Tuesday, April 13th, 1852.

MESSRS. STEARNS & MARVIN—Gentlemen: Yours of the 5th is at hand. In reply, every Safe in the fire, except yours, has proved good for nothing. I lost a large Safe—it was perfectly destroyed; but in the small Salamander I bought from you, nothing was injured.

Your obedient Servant, W. T. CLEMSON.

The above letter shows that in a real hot fire RICH'S SALAMANDERS are the only Safes to be depended upon. In the Pearl street fire, eleven Safes, of different makers, were totally destroyed, Rich's Safe alone bidding defiance to the flames, preserving notes, bonds, and mortgages, to the value of $100,000. The Chillicothe fire is a parallel case—every Safe but Rich's is destroyed. These repeated occurrences prove incontestibly that Wilder's Patent Salamander, with Rich's improvement, are the best Safes made in the United States, or in the whole world. They can be had at the depot, No. 146 Water Street, and at the Factory, corner of St. Mark's Place and Avenue A, New-York. STEARNS & MARVIN.

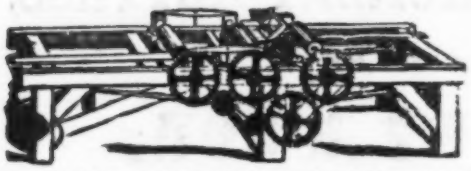
ALSO AT THE FOLLOWING AGENCIES:

Isaac Bridge, New Orleans, La.; L. M. Hatch, Charleston, S. C.; Thompson & Oudesluys, Balt., Md.; Holyoake, Lowns & Co., Memphis, Tenn.; Eddy & Morley, Toledo, O.; Allis & Howes, Evansville, Ind.; S. Shephard & Co., Buffalo, N. Y.; Walter K. Marvin, Lockport, N. Y.; Barney Brothers, Mobile, Ala.; Chas. H. Campfield, Savannah, Ga.; Hall and Moses, Columbus, Ga.; DeRosset & Brown, Wilmington, N. C; W. Randall, St. Paul, M. T.; Morly & Raynolds, Cleveland. O.; Alfred Wright, Roch., N. Y.; J. Hutton, Montreal, Ca.; Starr & Mason, Camden, N. J.; J. H. Westcott, Plattsburgh, N. Y.; Ashley Brothers, Ogdensburgh, N. Y.; A. B. Merrian, Oswego, N. Y. Dana & Co., Utica, N. Y.; Norton, Bradley, Co., Syracuse, N. Y.

1 yr.* Jy.'52

1852-56.

WOODWORTH'S Patent Planing, Tonguing, Grooving, and Rabeting Machine.



RECENT Decisions and Jury trials having fully and finally established all the claims of the Woodworth Patent, the subscriber is now prepared to furnish the most perfect planing machines ever constructed, and to license parties to use them in the counties of Allegany, Broome, Cattaraugus, Chenango, Columbia, Duchess, Fulton, Madison, Montgomery, Otsego, Putnam, Queens, Rockland, Suffolk, Tioga, Tompkins, Ulster, Washington, Westchester, Wyoming, Yates, and the other *unoccupied towns and counties in the State of New-York; and in the northern half of the State of Pennsylvania*, in the counties of Bradford, Crawford, Clinton, Elk, Lawrence, Lycoming, Luzerne, Mercer, M'Kean, Pike, Potter, Susquehanna, Tioga, Wayne, Warren, and Wyoming.

THIS JUSTLY CELEBRATED MACHINE was patented December 27, 1828, and the patent having been extended to the 27th day of December, 1856, it has now FIVE YEAR'S UNEXPIRED TERM. This machine, at one operation, reduces to a thickness, and planes, tongues, grooves, beads, and rabets in the best manner, 3,000 FEET OF BOARDS OR PLANK IN AN HOUR; and is also extensively used for planing, sticking, &c., door, sash, and blind stuff, and for sticking mouldings. All kinds of planing are performed by it in a better manner, and more expeditiously and cheaply, than it can be done by any other machine. The price of a complete machine is from $150 to $760, according to size and capacity. From 4 to 10 horse-power will drive the machine, and it will run for years without repairs.

Nine tenths of all the planed lumber used in our large cities and towns is now dressed with Woodworth's Machines. Those manufactured by the subscriber may be seen in constant operation in the Steam Planing Mills at Albany, Astoria, Canisteo, Dunkirk, Elmira, Flushing, Gibson, Jamestown, Leroy, Lockport, Newburg, Olean, Stapleton, Syracuse, Warrensburg, &c.

For Machines and Rights to use them in the unoccupied towns and counties in New-York and the northern half of Pennsylvania, apply to

JOHN GIBSON, Planing Mills,
Albany, N. Y.

Apr. 17-tf.

George W. Putnam's

PATENT

SAW-FILING MACHINE.

THE Subscriber [sole proprietor of the above Patent] keeps Machines constantly on hand at Glenn's Falls, Warren Co., N. Y. Will ship to order, to any part of the United States. Putnam's Machine, attended by one man, will file more saws in a given time than three men by hand in the old way, and do the work much better, at a great saving of files and saws. Lumbermen will find it to their interest to have one of these machines upon their mills. Terms for a single Machine, with right of use, Seventy-five Dollars. ALBERT H. CHENEY.

July 17, 1852.

NEW IMPROVEMENT
IN
PLANING MACHINES.

HAVING received letters patent for my New Improved Planing Machine for planing boards and planks, I now offer for sale Machines and Rights for States, Counties, or Cities. My Improved Machine is unlike all others in its operation, and it will produce more work and of better quality than any others now in use. The principles of its operation are simple, as there are no gear or belts in or about the machine, these being all placed beneath the floor. The amount of work done is only limited by the number of persons feeding the machine. A matching apparatus works in connection with this machine, by which the Boards are planed and matched in the same operation. The planing and matching are superior to that produced by the hand plane; and both sides of the board are planed at the same time if desired.

One of these machines will be in full operation at the Machine Shop and Foundry of Messrs. F. & T. Townsend in this city by the 1st of June next, where it can be seen.

GEORGE W. BEARDSLEE,
Residence 764 Broadway, Albany.

June 5th.

A. HALL'S
Fire-Brick Works,
PERTH AMBOY, N. J.

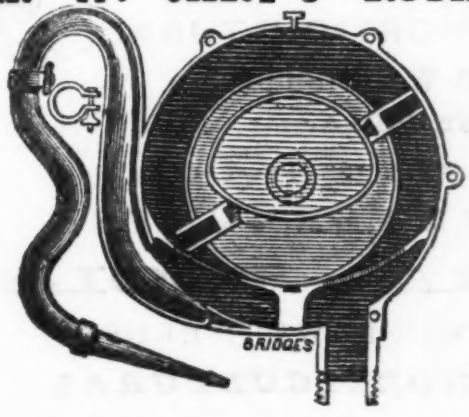
A LARGE stock of the best No. 1 Fire Brick constantly on hand. Vessels of any draft can load at any stage of the tide and season of the year.

SHAPES.—Large and small Bull-Heads, in walls, from 5 feet to 8½ feet circle; Wedges, Split Brick, Soaps, Cupola, for any circle, from 18 inches to 30 inches, constantly on hand.

KAOLIN of the best quality.

ONE MILLION Bricks can be made at this factory in six months, and none are made from October to April. All orders for unusual shapes should be given in the Spring, as bricks are *better* and made much *cheaper* in the *summer months*. Vessels loaded with dispatch. Orders promptly executed. Mar. 3, 1852.

A. W. CARY'S ROTARY FIRE-ENGINE PUMPS.



THE Inventor, after thoroughly testing this engine pump, for the past two years,) feels confident that it is not equalled any thing now in market, in the way of raising or forcing water: the motion being rotary, the stream is constant, without the aid of an AIR vessel. The packing is self-adjusting, very durable, and cannot well get out of order.

These pumps are well calculated for all the purposes for which pumps or hydrants may be used, viz., Factories, Steamboats, Tanneries, Breweries, Distilleries, Railroads, Water Stations, Hotels, Mines, Garden Engines, &c.

Among the many testimonials given of this pump, is a gold medal awarded at the last great Fair of the American Institute.

No. 1 is a house or well pump and domestic Fire Engine, and will raise from 20 to 30 gallons per minute.

No. 2 will raise 100 gallons at 120 revolutions.
No. 2½ " 200 " 120 "
No. 3 " 300 " 120 "

The quantity raised can be doubled, by doubling the revolutions. These machines are manufactured and sold by the subscribers at Brockport, N. Y., also in this city, 48 Courtland street, (corner of Greenwich,) by J. C. CARY.

Sept. 18–1y. CARY & BRAINERD.

PATENTS, INVENTIONS, &c.

J. H. BAILEY, Agent for the procuring and sale of Patent Rights for this country, Great Britain and the Continent.

MECHANICAL DRAWINGS.

Mechanical and Architectural Drawings executed in all kinds of Perspective, with dispatch and at moderate prices. Office, Tryon Row, No. 5, opposite City Hall. May 29—tf.

HOWLAND WOOD
ENGRAVER
128
NASSAU ST. N.Y.

BRIDGEWATER PAINT,
MANUFACTURED BY THE
BRIDGEWATER PAINT MANUFACTURING CO.,
NEW-JERSEY.

THE Company have now on hand a supply of this paint, which they offer to the public as the best article known for roofs and outside work on houses, or for brick and wood work generally. They can confidently recommend it as the most perfect protection from sparks and cinders, and therefore admirably adapted for decks of steamers, rail-road cars buildings and bridges, tow-boats, &c. It renders any thing upon which it is used perfectly water tight, and must therefore come into general use as a covering at all exposed to the rain. The strongest testimonials of the virtues of this article from officers of the army, superintendents of rail-roads, Insurance Companies, captains of vessels, painters, &c., may be seen, together with specimens on tin, wood, canvass, &c., at the depot of the Company. For sale, dry in packages of 200 lbs. and upwards, and in kegs of 25, 50, and 100 lbs., by

Feb, 1853.

R. BOGERT, General Agent,
125 PEARL AND 78 BEAVER STREET.

HIGHLAND NURSERIES, NEWBURGH,

A. SAUL & CO.,

In inviting the attention of their Patrons and the Public in general to their very extensive Collection of

Fruit and Ornamental Trees, Shrubs, &c.,

Would respectfully inform them that the stock which they offer for sale the coming spring is unusually fine, both as regards quality of trees, variety of kinds, &c., &c.

The soil and climate of our Hudson Highlands have rendered proverbial the success of the trees sent from here to all parts of the Union; and the accuracy and precision so indispensable in the propagation of fruit trees for which this establishment has long been celebrated, render errors in nomenclature of rare occurrence.

They have propagated in large quantities, all the *leading standard* varieties which are proved best adapted for general cultivation, especially those recommended by the American Pomological Society, as well as all *novelties*, both of *native* and *foreign* origin.

To particularize within the limits of an advertisement would be impossible; they refer to their General Catalogue, a copy of which will be sent to all *post-paid* applicants, on enclosing a Post-office stamp.

The following comprise a portion of their Stock, and are all of a fine growth: viz:

Pears in over 400 Varieties, both Standards on their own Stock for orchard culture, and on the Quince for Dwarfs, Pyramids, and Quenoucle for Garden Culture.

Apples in over 300 varieties, both Standards and Dwarfs. Also, Cherries, both Standards and Dwarfs, Plum, Apricot, Peach, Nectarine, and Quince trees in every variety.

Grape Vines, both Native and Foreign, for Vineries. Also, Gooseberries, 50 best Lancashire Varieties; Currants, Raspberry and Strawberry plants, of all the leading and known kinds, together with Sea Kale, Asparagus, and Rhubarb roots.

Ornamental Trees, Shrubs and Vines, both deciduous and evergreen, suitable for street and lawn planting, embracing all the new and rare Conifers, Weeping Trees and Shrubs of recent introduction.

Roses in every variety, including Hybrid Perpetual, Hybrid Bourbon, Hybrid China, Hybrid Damask, Prairie Boursault, Ayrshire, and other hardy climbing and Garden Varieties, as well as the more tender—Tea, China, Bengal, Bourbon, and Noisette Varieties.

Herbaceous plants: A large collection of Peonies, Phloxes, Campanula, Jonstemon. Œnothera, &c., &c.

Dahlias and bedding plants for the parterre and flower garden, in large quantities and varieties.

Hedge Plants: 100,000 Buckthorn and Osage Orange plants, two years' growth; Arbor Vitæ for Screens, &c., &c.

Dealers and Planters of trees on a large scale will be dealt with on the most liberal terms.

A. SAUL & Co.

Newburgh, Feb. 20, 1853.

DAVID LANDRETH'S

AGRICULTURAL AND HORTICULTURAL

IMPLEMENT AND SEED WAREHOUSE.

No. 65 CHESTNUT-ST. PHILA.

THE SUBSCRIBER OFFERS FOR SALE AN EXTENSIVE ASSORTMENT OF

AGRICULTURAL IMPLEMENTS.

HORTICULTURAL TOOLS.

GARDEN, GRASS, FIELD AND FLOWER SEEDS.

AGRICULTURAL AND HORTICULTURAL,

RURAL AND BOTANICAL PUBLICATIONS.

Implement and Seed Catalogues, Landreth's Rural Register and Almanac for 1853, furnished gratis upon personal or pre-paid application.

June, 3m. 2268. **D. LANDRETH, Philadelphia.**

BELLS! BELLS! BELLS!

The subscribers manufacture and keep constantly on hand, Church, Factory, Steamboat, Locomotive, Plantation, and School-house Bells, varying in weight from 10 lbs. to 4,000 lbs., with the most approved hangings.

At this Establishment small Bells pass through the same process in manufacturing as large ones, and we flatter ourselves that the Bells turned out at this Foundry are superior in point of tone and workmanship to those of any other in the Union.

We have 13 Gold and Silver Medals which have been awarded for the *best* Bells. The patterns have been improved upon for the past thirty years. Communications by mail receive prompt attention. Orders for Bells of any size will be filled as soon as received.

Address, at West Troy, N. Y., **A. MENEELY'S SONS.**

Hitchcock & Co., Agents, 116 Broadway, New-York.

MATHEMATICAL INSTRUMENTS FURNISHED, OF THE BEST DESCRIPTION. Dec. '52

The Slave Trade and Slavery.

Published lately by A. HART, (late Carey & Hart,) No. 126 Chesnut street, corner of Fourth, THE SLAVE TRADE, DOMESTIC and FOREIGN; WHY IT EXISTS, AND HOW IT MAY BE EXTINGUISHED. By H. C. CAREY. Complete in one volume.

It is hardly possible to exaggerate the value of Mr. Carey's book. * * * The mere compilation of facts in relation to the social condition of the several communities of Christendom is of vast utility.—*Daily Times.*

The arrangement of the book is excellent, and the calm, logical manner in which the various topics are discussed is truly admirable.—*Commercial Advertiser.*

Mr. Carey is a political economist. All his views spring from that science, Cause and Effect---with these he deals. He does not depend on rhetoric. He never appeals to the imagination or the passions. He does not invoke generosity. He does not demand enthusiasm. He lays down laws. Euclid in form, or Spinoza in spirit is not more calm. He addresses himself to thinkers. * * It should be in the hands of every statesman, of every philanthropist, of every well wisher to his fellow-man in bondage. It is an invaluable addition to the literature of the country and of the world.—*N. Y. Tribune.*

There is vigorous thought and mature reflection in this book.—*Literary World.*

The volume now before us is one of the most valuable contributions made in this country to the literature of labor. It is a dispassionate inquiry, to be read without apprehension of offence by the friend or the enemy of Slavery.—*Daily Register.*

It treats of that often treated subject in a way that is at once novel and profound.—*Albany Evening Journal.*

WORKS BY THE SAME AUTHOR.

Principles of Political Economy.

IN THREE VOLUMES, 8VO.

Whether we adopt or reject the views of Mr. Carey, it must be acknowledged that we find in his works a great number of ideas that are new, and worthy of serious examination.—*Dictionnaire de l'Economie Politique.*

The Past, the Present, and the Future.

IN ONE VOLUME, 8VO.

The system here developed, of which we have indicated only one of the principal features, is supported and illustrated by numerous examples. It is, as our readers see, the theory of progress, redeemed from the wildness of philosophical speculations, economically established, and brought home to us by the facts.—*Dictionnaire de l'Economie Politique.*

Mr. Carey is the political economist of the age. He has delivered the science of society from its darkness and bondage, and brought the system of the world's business, the financial and industrial interests, and the civil and social relations of men and nations, within the dominion of principles, and set their mysteries clear in the light of a simple and certain philosophy.—*Sartain's Magazine.*

One of the strongest and most original writers of the age.—*Westminster Review.*

The Harmony of Interests:

AGRICULTURAL, MANUFACTURING AND COMMERCIAL.

We can safely recommend this remarkable work to all who wish to investigate the causes of the progress or decline of industrial communities.—*Blackwood.*

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IN FRANCE, GREAT BRITAIN, AND THE UNITED STATES.

IN 8VO.

The best work on the credit system that has ever been published.—*Journal des Economistes.*

Answers to the Questions:

WHAT CONSTITUTES CURRENCY? WHAT ARE THE CAUSES OF ITS UNSTEADINESS? AND WHAT IS THE REMEDY?

IN 8VO.

For Sale by A. HART, Philada.; J. WILEY, New York; P. PUTNAM & CO., New York; LITTLE & BROWN, Boston; and Office of the Plough, Loom, and Anvil, 9 Sp[illegible], New York.

WEBSTER'S DICTIONARY.

PRICE REDUCED TO SIX DOLLARS.

THE ENTIRE WORK, UNABRIDGED,

In One Volume, Crown Quarto, of 1452 Pages,

Containing all the matter of Dr. Webster's Original Work, his Improvements up to the time of his death, and now thoroughly revised, and greatly enlarged and improved, by

PROFESSOR CHAUNCEY A. GOODRICH, OF YALE COLLEGE.

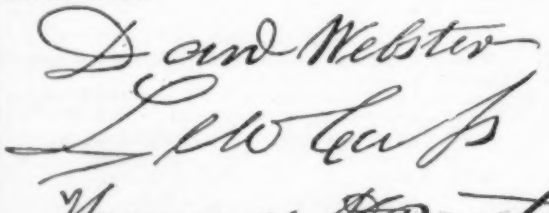
PUBLISHED BY G. & C. MERRIAM, SPRINGFIELD, MASS.,

AND SOLD BY BOOKSELLERS IN NEW YORK, BOSTON, PHILADELPHIA, BALTIMORE, WASHINGTON, CHARLESTON, MOBILE, NEW ORLEANS, ST. LOUIS, CINCINNATI, LOUISVILLE, PITTSBURGH, CHICAGO, DETROIT, BUFFALO, ROCHESTER, ALBANY, TROY, BURLINGTON, PORTLAND, AND THROUGH THE COUNTRY.

In the language of an eminent critic, "In *its Definitions* — the object for which nine tenths of our references to such a work are made — it stands without a rival in the annals of English lexicography." These definitions, without abridgment or condensation, are only given in this, Dr. Webster's large work, and are not found in any mere abridgment, or works on a more limited plan. It contains THREE TIMES the amount of matter found in any other English Dictionary compiled in this country, or any abridgment of this work, yet is sold at a trifling advance above the price of other and limited works.

TESTIMONIALS.

It is with pleasure that we greet this new and valuable contribution to American literature. We recommend it to all who desire to possess THE MOST COMPLETE, ACCURATE, AND RELIABLE DICTIONARY OF THE LANGUAGE.



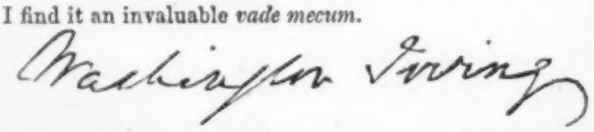
And thirty other members of the United States Senate.

THEODORE FRELINGHUYSEN, *Chancellor of the University of New York.*

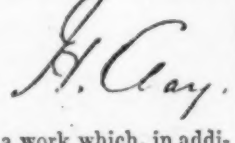
WILLIAM H. CAMPBELL, *Editor N. Y. District School Journal.*

GEORGE N. BRIGGS, *Governor of Massachusetts.*

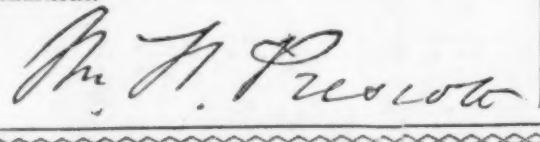
I find it an invaluable *vade mecum.*



I think it the most useful Dictionary of the English and American language extant.



Every scholar knows the value of a work which, in addition to its etymological learning, has done so much to enlarge our acquaintance with the English vocabulary, both by the number of its words, and the accuracy and extent of its definitions.



WASHINGTON, *Jan.* 31, 1850.

I possess many Dictionaries, and of most of the learned and cultivated languages, ancient and modern; but I never feel that I am entirely armed and equipped, in this respect, without Dr. Webster at command.

DANIEL WEBSTER.

We rejoice that it bids fair to become the standard Dictionary to be used by the numerous millions of people who are to inhabit the United States. — *Signed by one hundred and four Members of Congress.*

"Best specimen of the printing art ever produced in this country." — *Librarian of Congress.* "Etymological department surpasses any thing that has been done for the English language." — *George Bancroft.* "The copious list of geographical names is itself WORTH THE COST OF THE WHOLE WORK." — *School Committee of Framingham.* "Without reserve or qualification, the best extant." — *Pres. Olin.* "Surpassed in fullness and accuracy by none in our language." — *Pres. Wayland.* "It far excels all others in giving and defining scientific terms." — *Pres. Hitchcock.* "The standard wherever the English language is spoken, it deserves to be, must be, is, and will be." — *Prof. Stowe.* "An honor to the language." — *Pres. Humphrey.* "A copiousness, perspicuity, and accuracy not found in any other." — *Pres. Day.* "A great improvement on all which have preceded." — *Pres. Bates.* "Worthy of general patronage." — *Pres. Woods.* "Most complete, accurate, and reliable of the language. — *William B. Calhoun, Robert C. Winthrop, Richard S. Rust, Theodore F. King, Edmund Burke, John Young, Christopher Morgan, Alvah Hunt, Millard Fillmore, and Presidents Beecher, Larrabee, Keller, Woolsey, Blanchard, Smith, and Knox.*